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International Journal of Advance and Innovative Research
★ ISSN : 2394-7780 ★

International Journal of

Advance and Innovative Research
(Conference Special)

INTERNATIONAL CONFERENCE

ON

Multidisciplinary Research in Current Era

On 1st August 2021

Organized By

INDIAN ACADEMICIANS AND RESEARCHERS ASSOCIATION (IARA)

International Journal of Advance and Innovative Research

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SJIF 2018 = 7.363

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CONTENTS

Research Papers

ALGORITHM DEVELOPMENT FOR INTENSITY OF COAL FIRE PREDICTION AND SAFETY MEASURES IN UNDERGROUND COAL MINES

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ABSTRACT

The coal fires and gas explosion is most terrible hazard in underground coal mines. It affect the coal production loss due to coal fires and gas explosion using wrong blasting step and safety control measures. The coal fire indexes affect the management for selection of safety measures. The ratio of coal fire indexes may be sufficient in case of control of active coal fire. It requires an assessment of explosibility of air mixture build up in coal mines. In this research work, a computer algorithm 'CoFIEAMA' is developed which provides an easiest and automatic computation for assessment of explosibility of air mixture and intensity of coal fire prediction.

Keywords: Gas sampling data; computer algorithm; fire ratio; coal fire intensity; safety measures; data modeling;

1. INTRODUCTION

Coal fire is a serious problem in Indian coal mines. Coal mine fire is one of the major threating disasters for mine safety management [15]. Spontaneous combustion of coal is one of the major problems in the coal mine [11]. The spontaneous combustion of coal caused by low temperature oxidation is a key safety issue in the mining, storage, and transportation of coal, which has restricted and continues to severely restrict the development of the coal industry [19, 20, 21, 22, 23]. The fire may occur due to exogenous and endogenous causes, by which coal liberated heat to the air or heat absorbed into it [11]. In Indian coal mines, most fires occur due to spontaneous combustion, a process of coal oxidation [12]. Explosions originated from or around the sealed off areas in underground coal mines present a serious safety threat [13]. Coal mine fire often induce occurrence of gas or dust explosion which cause the expansion of disaster [15]. Therefore, the coal mine fire disaster relief is widely recognized as the most difficult and dangerous work in coal disaster rescuing [15]. Fire gases are liberated due to oxidation of coal in sealed off coal mines [12]. The determination of coal fire indices is done with proper monitoring of fire gases. The efficiency of the fire control measures, particularly aims at cutting of supply of oxygen to the fire area, is accessed by various fire index ratios such as Young's ratio, Graham's ratio. But none of the ratio indicates the degree of the explosibility of gas mixture present in the fire area. Sometimes, when supply of air to a sealed off area is not totally cut off; it may even lead to loss of the mine due to explosion. In case of control of active fire, when Graham's ratio is very high, the fire index ratio in conjunction with assessment of explosibility by Coward's diagram was found conclusive in controlling the active fire, assessment of the explosiveness and providing safety in mines. The Coward explosive triangle diagram which was published by Coward and Jones in 1952 has been considered as a fast and easy way to determine the explosibility of the gas-mixture [13]. The paper describes a computer algorithm 'CoFIEAMA' for automatic computation of assessment of explosibility of air mixture and intensity of coal fire prediction and its application during fire control. Flammability of methane mixture for various compositions can be traced by Coward's diagram shown in **Fig.1**. The Y-axis is calibrated from 0-20.93% oxygen and the X-axis is calibrated from 0-100% methane. Point A corresponds to pure air whereas B to pure methane and line AB represents the mixture of methane with air. P is the lower limit of explosibility and Q is the upper limit of explosibility. R is the nose point. No mixture containing less oxygen than R can explode. Point S represents air free analysis of nose limit. The area PRQ is explosive. The area BQRS is potential explosive, i.e., sample point lying in this region becomes explosive when mixed with air. The area **APRSO** is non-explosive. This contains either very little amount of methane or so much Nitrogen that the mixture cannot be ignited. Further, the gases will not form explosive mixture even when mixed with air. The diagram is very useful during rescue, recovery, sealing and re-opening of fire area when the possibility of the presence of fire in the area is remote.
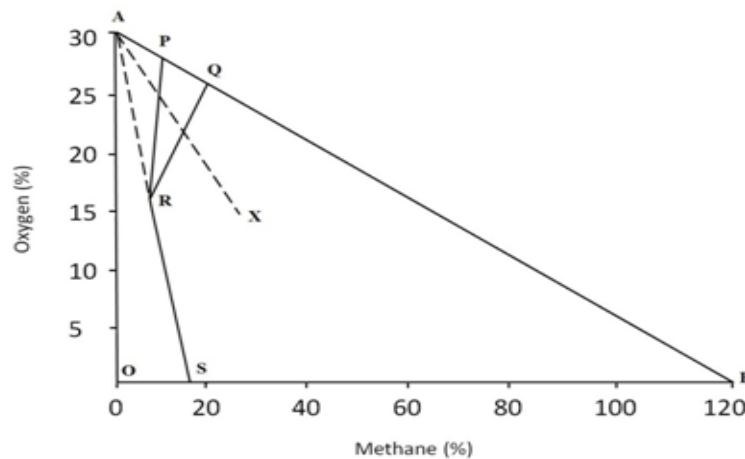
Fig. 1. Coward's diagram

During fire, mines also contain other combustible gases like CO and Hydrogen which may form explosive mixture. The range of explosibility of different gases is given in **Table-1**.

Table-1: Range of explosibility of different gases

Gas	Range of Explosibility (%)
Methane	5-15
Carbon Monoxide	12.5-74
Hydrogen	4-75
Acetylene	2.5-100
Oxygen	4-94
Ethane	3-12.4

According to the coward's diagram, the presence of combustible gases other than methane is very difficult. The coordinates of P, Q and R change with presence and concentration of other combustible gases. Thus, when multiple combustible gases are present, the diagram has to be drawn again and again for each sample, during emergency caused by a fire, it becomes very difficult to draw such diagram individually and draw any useful conclusion. To ease this problem, Ellicott's has transformed the coward's diagram, which can be coded into computer. The program can convey the explosive state of the analyses gas mixture quickly and easily in interpretable form. Ellicott transformed the Coward - Jones explosive triangle into a CH4- 0-O2 system, in a diagram in X and Y, where X represents the relative concentration of combustible gases and Y represents the relative concentration of oxygen [14]. The coordinated of the analyzed gas sample are modified to [X_m, Y_m] in Cartesian coordinates. All the characteristics of coward's diagram are retained in the Ellicott's extension. Explosibility of gas mixtures can then be determined with the help of Coward's diagram or USBM explosibility triangle or Ellicott's extension [4]. Effect of air or inert gas dilution or increased combustible content in general air dilution cause shift of the sample point towards top-left (Non-Explosive), inert dilution towards bottom-left (Non-Explosive) and increase in combustible content towards bottom-right (Potential-Explosive). Conversion from coward's diagram to Ellicott's diagram for a mixture of multiple combustible gases are achieved by first calculating the coordinates of lower and upper limit of explosibility and coordinates of nose point using standard mathematical formulas. These coordinates are then modified by shifting the origin of the system to the nose point using standard mathematical technique.

2. APPLICATION FOR CONTROL OF FIRE IN MINE ENVIRONMENT

Spontaneous combustion is a process in which oxidation reaction takes place without the interference of an external heat source [17]. For better understanding, the fire in coal mines may require three major parameters viz., Fuel/Coal, Oxygen/Air and Accumulation of heat. The increase in temperature is caused by the heat liberated by coal through chemical reactions [18]. In spontaneous combustion, coal is the fuel, and the interaction of oxygen on the surface of the coal leads to oxidation reactions which result in heat and, eventually, if left untreated, fire [1]. Prediction of spontaneous combustion of coal based on the gas monitoring data is conducted using different gas indices [2]. The coal fire will thrive only when the values of the three controlling factors are located in the red area [5]. This fire triangle is shown in **Fig.2**.
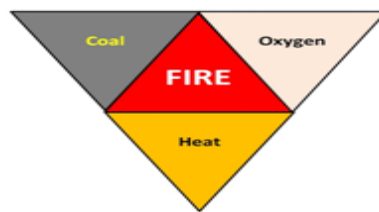
Fig. 2. Fire traingle

Shortage of any one of these parameters leads to extinguishments of the fire. Flammability of the gas mixture in the fire area is non-explosive, potential explosive and explosive, presented in **Fig.3.** Non-explosive is occurred when coal involves in burning is less and oxygen is more. Potential explosive is occurred when more coal is involved in burning in presence of less oxygen. And, when sufficient coal involved in burning in presence of sufficient oxygen then it will comes in explosive.
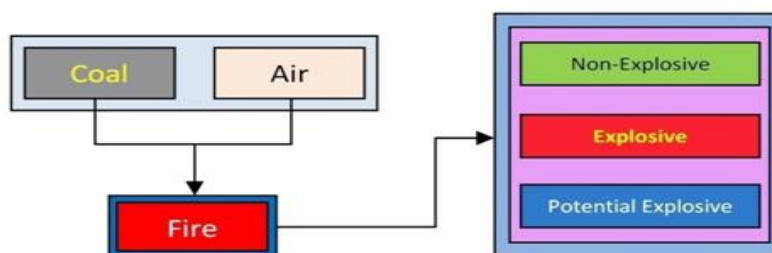
Fig. 3. Flammability of the gas mixture & explosibility type

Fire intensity describes the physical combustion process of energy release from organic matter [3]. The spontaneous heating of coal with a potential transition into endogenous fires constitutes a direct risk to the safety of the working conditions and unfavourably influence the mine environments [17]. During control of fire by cut off/reducing the supply of the oxygen to the fire area achieved either by neutralization of pressure differential by application of dynamic balancing of pressure technique or by application of surface coating material, the trend of the mixture regarding its explosibility may shift from one region to the another region of explosibility. Hence this program is used for quick and correct assessment of the situation in the fire area for taking safety measures.

3. METHODOLOGY

Coal fire intensity predictive model can include both mathematical expressions and expert systems with scientific judgment. In recent years, computer simulation is becoming popular in scientific research, particularly as far as the research for assessment of explosibility of air mixture and intensity of coal fire prediction through computational modeling is concerned. Computer modeling and simulation of intensity of problems and coal fire prediction requires a multi-disciplinary approach in which mathematical methods and expressions with use of computer simulation are applied simultaneously in the explosibility of air mixture and coal fire intensity predictive system. An integrated role of mathematical modeling and computer simulation is very important for any system. The assessment of explosibility of air mixture and intensity of coal fire prediction using mathematical modeling provides an optimal solution for the concerned problems related to ratio of coal fire indexes and management for selection of safety measures in underground coal mines. And also computer simulation gives the effective presentation of stepwise system processing in order to model view. Obviously, mathematical and computational modeling impose a systematically flow of computation and provides best model for accessing an optimal result in explosibility of air mixture and coal fire intensity predictive system with good presentation view. For ensuring safety, the prediction of spontaneous combustions is very important [2]. Fire risk treatment is the process of improving existing risk controlling measures, developing new risk controlling measures and implementing these measures to reduce fire risk [24]. The coal fire intensity prediction is of great significance to the management and control of safety measures in underground coal mines.

3.1. Fire ratio

Interpretation of gas analysis results systematically calls for a powerful tool known as fire indices [4]. Prediction of spontaneous combustion of coal based on the gas monitoring data is conducted using different gas indices [2]. Since the beginning of the twentieth century many ratios and composites of gas concentration have been suggested to assist in the interpretation of fire gases [4].

3.1.1. Graham's ratio

Graham's ratio is a commonly used coal fire ratio or gas ratio for the analysis and prediction of fire index in underground coal mine environment. This ratio is widely used in Indian mines as a criterion of the state of heating and fires in the early as well as later development stages [4]. The carbon monoxide/oxygen deficiency ratio has been generally accepted since the early 1920's as a scale for the presence of a heating or a fire [16]. This ratio is also called Graham Index, Graham Ratio or Carbon Monoxide Index [16]. Graham's ratio is a commonly used indicator for measuring the intensity of the oxidation of coal in underground mine atmospheres [9]. Graham's ratio (GR) is also known as index of carbon monoxide (ICO) [6]. In this ratio, the degree of heating can be determined by the rate of production of CO with oxygen consumed by the combustion of coal [7]. The ratio of the amount of carbon monoxide produced over the oxygen absorbed varies with the temperature of oxidation of coal and also with the time of coal exposure to oxidation, thereby allowing this ratio to be used as an index of the rate of oxidation in a mine [10]. The production of CO in relation to the oxygen consumed by the oxidized material is a function of temperature and therefore indicates the average intensity character of a fire [4]. The fraction of the oxygen absorbed is represented as a result of the fire or heat which appears as carbon monoxide in the form of percentage. It provides the measuring ratio of the efficiency of conversion of O2 to CO gas. It is also a significant tool in the ability to predict the onset of a heating or the intensity of a heating [8]. This ratio is usually multiplied by 100 to give a convenient number [16]. Graham' ratio can be obtained as follows:

$$Graham's\ ratio\ (GR) = \frac{100 * Carbon\ Monoxide\ (\%)}{Oxygen\ Deficiency\ (\%)} = \frac{100 * Carbon\ Monoxide\ (\%)}{[0.265 * Nitrogen\ (\%)] - Oxygen\ (\%)}$$

where, 0.265 is a constant or theoretical ratio of oxygen to nitrogen.

Experimental values for rating of fire intensity using Graham's ratio is shown in **Table-2**.

Table-2: Experimental values for rating of fire intensity using Graham's ratio

Graham's ratio (GR)	State of fire
GR <= 0.4%	Normal value : No fire
0.4% < GR = 1%	Existence of heating
1% < GR = 3%	Heating about to be active fire
3% < GR = 7%	Active fire
GR > 7%	Blazing fire

3.1.2. Young's ratio

Young's ratio is also called CO_2/O_2 deficiency ratio. Carbon dioxide produced as a percentage of oxygen absorbed is considered as Young's ratio or CO_2/O_2 def. Ratio [4]. In case of failures of the CO/O_2 deficiency ratio, where CO extinction is not indicative of fire status, the CO_2/O_2 deficiency ratio can be applied [12]. As the fire advances from smouldering to exposed flare, the burning of CO will increase the amount of CO, due to presence of sufficient oxygen [6]. Hence, a simultaneous rise in $CO_2/\Delta O_2$ and fall in $CO/\Delta O_2$ indicates further development of the fire [4]. Higher values of the CO_2/O_2 deficiency ratio indicate a change from heating to actual fire [12]. This ratio is usually multiplied by 100 to give a convenient number [16]. Young's ratio can be obtained as follows:

$$Young's\ ratio\ (YR) = \frac{100 * Carbon\ Dioxide\ (\%)}{Oxygen\ Deficiency\ (\%)} = \frac{100 * Carbon\ Dioxide\ (\%)}{[0.265 * Nitrogen\ (\%)] - Oxygen\ (\%)}$$

where, 0.265 is a constant or theoretical ratio of oxygen to nitrogen.

Experimental values for rating of fire intensity using Young's ratio is shown in **Table-3**.

Table-3: Experimental values for rating of fire intensity using Young's ratio

Young's ratio (YR)	State of fire
YR = 25%	Normal value : No fire
25% < YR = 35%	Existence of heating
35% < YR = 45%	Heating about to be active fire
45% < YR = 55%	Active fire
YR > 55%	Blazing fire

4. PROPOSED COMPUTER ALGORITHM

A computer algorithm represents a systematic processing of modules for assessing the coal fire ratio and intensity along with explosibility type in mines area. There are two modules in the algorithm. The first module deals with user login authentication. The second module includes the computation for assessment of explosibility of air mixture & coal fire intensity prediction. The model building expert system takes the fragments of subset as input and produces the overall determination of coal fire ratio and intensity score in output. The entire mathematical modeling and computer simulation approach has been put together in the computer algorithm 'CoFIEAMA', developed by Satrughan Kumar Singh, which provides an effective and optimal solution for computation of coal fire ratio and intensity along with explosibility type using prediction model and analysis.

// Algorithm : CoFIEAMA

A. User Authentication Module:

To access the master module of the system, a valid user login authentication is required.

1. input 'Username and Password'

2. if (Username = = database.username AND Password = = database.password) then

open 'Master Form'

else

error message 'Invalid Login Credential'

open prompt to re-enter 'Username and Password' and GOTO step-1

end if

B. Computation for Assessment of Explosibility of Air Mixture & Coal Fire Intensity Prediction Module:

It helps the user for computation of explosibility of air mixture & coal fire intensity prediction.

1. input 'value of carbon dioxide'; CO_2

input 'value of oxygen'; O_2

input 'value of methane'; CH_4

input 'value of hydrogen'; H_2

input 'value of carbon monoxide'; CO

2. $F = (CH_4 + H_2 + CO)$

3. // find percentage of CH_4, H_2, CO

$P_m = (CH_4 / F) * 100$

$P_h = (H_2 / F) * 100$

$P_{co} = (CO / F) * 100$

4. $R_j = 100 - (F + O_2 + CO_2)$

5. find RK, RL, RM, RN, RO;

6. $P = \left[\dfrac{(P_m * 3.2) + (P_{co} * 2.16) + (P_h * 10.2)}{\left(\frac{P_m}{6.66}\right) + \left(\frac{P_{co}}{18}\right) + \left(\frac{P_h}{5.73}\right)} \right]$

$P = \left[\dfrac{(P * CO_2)}{(R_j + CO_2) + RO} \right]$

7. $Q = 0.209 * (100 - P - RN)$

$R = -0.209 * RK + 20.93$

$$S = -0.209 * RL + 20.93$$

$$T = -20.93 * RN/(Q - 20.93)$$

$$U = 0$$

8. $\quad V = (O2 - 20.93) * (RK - RN) + F * (Q - R)$

$$W1 = \frac{((RK - RN) * (-F * 20.93) - F) * (RK * Q - RN * R)}{V}$$

$$X1 = \frac{F}{W1} - 1$$

$$V = (O2 - 20.93) * (RL - RN) + F * (Q - S)$$

$$W2 = \frac{((RL - RN) * (-F * 20.93) + F * (RL * Q - RN * S))}{V}$$

$$Y1 = \frac{F}{W2} - 1$$

9. $\quad RK = RK - RN$

$$RL = RL - RN$$

$$T = T - RN$$

$$F = F - RN$$

$$RN = RN - RN$$

10. $\quad R == R - Q$

$$S = S - Q$$

$$U = U - Q$$

$$O23 = O2/F$$

11. $\quad O2 = O2 - Q$

$$Q = Q - Q$$

$$F1 = F$$

$$O21 = O2$$

$$A = O2/F$$

12. $\quad$ if $F > 0 \quad t\square en$

$$F = ATAN(A)$$

$$F = F * \frac{180}{3.14}$$

else

$$F = ATAN(A)$$

$$F = F * \frac{180}{3.14} + 180$$

end if

$$B = R/RK$$

13. $\quad$ if $RK > 0 \quad t\square en$

$$RK = ATAN(B)$$

$$RK = RK * \frac{180}{3.14}$$

else

$$RK = ATAN(B)$$

$$RK = RK * \frac{180}{3.14} + 180$$

end if

$$C = S/RL$$

14.   if RL > 0 then

$$RL = ATAN(C)$$

$$RL = RL * \frac{180}{3.14}$$

else

$$RL = ATAN(C)$$

$$RL = RL * \frac{180}{3.14} + 180$$

end if

$$D = U/T$$

15.   if T > 0 then

$$T = ATAN(D)$$

$$T = RL * \frac{180}{3.14}$$

else

$$T = ATAN(D)$$

$$T = T * \frac{180}{3.14} + 180$$

end if

$$O2 = SQRT(O21 * O21 + F1 * F1)$$

16.   if F < RK then

if RL < F then

$$Z = \frac{F-RL}{RK-RL} * 90$$

else

L1:

if F < RL then

if F > T then

$$Z = 270 + \frac{F-T}{RL-T} * 90$$

else

L2:

if F < 0 then

$$Z = 90 + \frac{F-RK+360}{360-RK+T} * 180$$

else

$$Z = 90 + \frac{F-RK}{360-RK+T} * 180$$

end if

end if

else

GOTO L2:

end if

end if

else

GOTO L1:

end if

17. $\quad Z = Z * 3.14 / 180$

18. $\quad X_k = COS(Z) * O2$

$Y_k = SIN(Z) * O2$

19. $\quad$ if $X_k < 0$ $t\square en$

// display the output

msgbox ('Non-Explosive')

else

if $Y_k < 0$ $t\square en$

// display the output

msgbox ('Potential Explosive')

else

// display the output

msgbox ('Explosive')

end if

end if

20. $\quad$ exit

5. RESULTS & DISCUSSIONS

In our study, we have collected gas samples from 27 sampling points in Jharia coalfield. Experimental data were analyzed and important parameters such as CO_2, O_2, CH_4, H_2, CO were chosen as inputs to the explosibility of air mixture & coal fire intensity prediction model. In this proposed work, we observe 3 sampling points having non-explosive and 24 sampling points having explosive type. Besides this, we also analyzed the current status of fire ratio and intensity of heating through the mining report of each collieries of Jharia coalfield by physical discussion and survey. As per this mining report, the current status of Jharia coalfield is very critical and worst with maximum fire ratio and intensity score. It can be noticed that maximum sampling points of Jharia coalfield comes under explosive area which is suffering from acute and danger situation of explosive fire. We analyzed and correlated same data with already two discovered methods, Graham's ratio and Young's ratio, both methods provide some different output. The Graham's ratio shows fire explosibility with 8 sampling points having non-explosive and 19 sampling points having explosive type. Whereas, Young's ratio shows fire explosibility with 12 sampling points having non-explosive and 15 sampling points having explosive type. These changes are too more and wrong with different explosibility type of Graham's and Young's ratio as per our proposed method and also mining report of each collieries of Jharia coalfield. The output of Graham's ratio and Young's ratio are different and our proposed method show good output which are compatible and similar to the current status of each collieries where we have collected data samples. Our proposed method shows an optimal result with compatibility of mining report of each collieries of Jharia coalfield. The prediction ratio of the proposed model is higher and optimum than Graham's and Young's ratios. The proposed model provides the significant and higher accuracy for the overall determination of coal fire ratio and intensity score. This proposed model also provides fast and maximum intensity of heating than Graham's ratio and Young's ratio. For the determination of optimal value for coal fire ratio and intensity score by investigation and testing, this CoFIEAMA algorithm of the proposed model appears for better recommendation.

The optimum control management is very necessary in explosive areas of Jharia coalfield for selection of safety measures. The results presented an automatic computational technique for computation of explosibility of air mixture & coal fire intensity prediction by potential application. The optimal control management and

mitigative measures aims at to cut-off the supply of oxygen using dynamic balancing of heat and pressure through application and as implemented well as recommended by the constant guidance and vigilance. The status of fire indexes and explosibility type of the gas mixture in coal mine fire area are simulated by stepwise flow of algorithm after reducing supply of oxygen to the fire area using application of dynamic balancing of heat and pressure. Accordingly, the safety measures of explosibility type from isolation to explosion in the fire areas and further improvement in sealing quality and fire aspect has been taken for the desired and optimized safety measures. So, this model of explosibility of air mixture and coal fire intensity predictive system has been developed with many essential assumptions to achieving the goals easily with mathematical expressions and computational model. It provides simple and easiest way to simplify the intensity of coal fire problems and prediction of explosibility of air mixture in coal fire areas using mathematical and analytical methods. The proposed model facilitates an automatic estimation and prediction for optimal output with gas sampling data in underground coal mines.

6. CONCLUSION

Development of computer algorithm for assessing the coal fire ratio and intensity along with explosibility type has been attempted. A computational technique has been adopted for integrating the effect of gases parameters for determining the overall coal fire ratio and intensity score. The coal fire ratio and intensity prediction model has been applied to evaluate the gas samples collected from different locations of Jharia coalfield comprised with different explosibility type. The status of coal fire ratio and intensity along with explosibility type were determined more accurately through proper and conscientious sampling and analysis. This proposed computational approach may be useful for general purpose to assess the coal fire ratio and intensity in any mines. The assessment of status of fire in conjunction with knowledge of explosibility behaviour of gas mixture built in the mine found very effective in working out safety strategies. This is general enough to apply in other mine operation for same purpose.

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REVIVAL OF KEYNESIAN ECONOMICS AND ITS IMPACT ON ECONOMIC RECOVERY

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ABSTRACT

Face of the economic profession was changed after the limitations of classical economics was realized and the need for another perspective on employment and output decisions was felt during the Great Depression of the thirties. Keynesian economics answered almost all the unanswered questions at the time. His focus on effective demand was a divergence from the ongoing supply-oriented economics of which Say was a major proponent. This made him an iconoclast at the time in economics. His work was challenged when it failed to provide solutions to problems of the sixties and seventies associated with stagflation. But Keynesian economics has still seen a revival or resurgence after the Great Recession of 2008. This paper seeks to study this revival and understand the role of Keynesian economics after an economic downturn. Especially after the economic contraction due to the pandemic.

Keywords: Keynesian economics, Keynes, Economic downturns, recovery.

1. INTRODUCTION

James Maynard Keynes is one of the most influential economists falling in the category of those economists who were able to make a name outside the economic profession. Other economists included in the list are Adam Smith, who laid the foundation of economics as we know it and second such economist is Karl Marx. No other economist other than these three was able to resonate deeply on a larger scale such that their economic doctrines dominated any discussion or debate in the political, social or economic domain (Aspromourgos, 2019). It is needless to say that the Great Depression could have had many consequences in various disciplines but ideologically the biggest impact was the Keynesian revolution. The General Theory of Employment, Interest and Money is Keynes' magnum opus and remains to be one of the most venerated works in economics (Ayres, 1946). Keynes' intellectual revolution led to the birth of not only a separate discipline but also influenced a generation of young economists.

Keynesian economics dominated the domain decades back which was renewed by economists like Hansen, Hicks, Lerner, etc after modifications (Rowthorn, 2020). The synthesis of Keynesian economics starts with the aberration of one of the major notions of classical economics proposed by Say which stated that supply will always be met by equivalent demand (Blaug, 1997). Keynesian economics pays major attention to the demand side. He understood that the capitalist economy was prone to crisis. In fact, Schumpeter stated that his works were a result of his operative analysis of British capitalism (Rowthorn, 2020 ; Goswami, 2018).

Keynes also associated increase in employment with increased economic activity due to growth of consumption goods industry and thereby introducing the term propensity to consume to economics (Hicks, 1936). Along with that Keynes introduced a multiplier which happens to explain the incremental income due to increase in aggregate demand (Robertson, 1936). Further, Keynesian economics felt the need to point out that shocks experienced by a modern capitalist economy could turn into prolonged depressions if external stimulus is not provided as monetary measures are rendered useless in such situations (Hoover, 1988).

Other than conceptual framework Keynesian economics can be summarised as the achievement of few goals which are full employment in the economy along with adjustment of balance of payment. Since the latter goal was associated with the international economy it led to the birth of the Bretton Woods system and establishment of the International Monetary Fund. He further proposed promotion of international trade and hoped for reduction in trade barriers after the war. This goal is followed by the goal of peace and its role in economic development led to the establishment of the World bank which will work to support long term development whereas the IMF was established to rectify short term macroeconomic imbalances (Vines, 2017). Hence, Keynesian economics encompassed almost every aspect of economics.

1. CRITICISM OF KEYNESIAN THEORY

Keynesian economics dominated macroeconomics in its nascent stage but during the sixties especially during the oil crisis Keynesian economics was finally questioned which led to birth of new classical economics. This crisis impacted the whole world as prices of oil went up and led to increase in general price level in most economies. This led to realization that while Keynesian economics had the answer to ass involuntary unemployment, it still needed to contemplate inflation. This led to deeper inquiry into monetarism (Passinetti,

2018). This era led by Milton Friedman analysed the unemployment with a monetary perspective (Friedman & Schwartz, 1963; Eichengreen, 2020).

Keynesian economics fell further after the economic collapse of East European economies which were primarily socialist. The collapse helped spread the ideas of primitive free market economy prevalent before the birth of modern macroeconomics. Other than these events it can be believed that marginalist revolution and laissez-faire never lost its appeal amongst practitioners and academicians (Pasinetti, 2018). One can conclude that due to oil shock in seventies and prevailing stagflation accompanied by existing apprehension had economists still second-guessing Keynesian economics.

2. REVIVAL OF KEYNESIAN ECONOMICS

After losing its charm in the mainstream, there was a return in interest in Keynes (Skidelsky, 2017). Sub-prime crisis in the United States led to a recession which initiated a global economic crisis. The crisis was spread in Europe, and it was followed by sovereign debt crisis that put Eurozone in jeopardy (Hein & Lavoie, 2019).

The policy response to the crisis renewed interest on Keynes and his analysis of capitalism system and how it is prone to economic downturns. Along with the nature of capitalist economy, attention was given to demand management yet again. Keynes suggested investment in public works as an effective tool to reduce unemployment during a crisis (Paesani, 2017). The fragility of economic systems under capitalism highlighted the need for discretionary fiscal policy which came with an analysis that was practical after the it's application to cure the Great depression (Eichengreen, 2020). This prompted towards a belief that Keynesian economics is as active as it should be.

Speaking of the current times, many economies experienced shortage of demand. So, one can describe this situation as inherently Keynesian due to this characteristic. Another defining feature is turn to fiscal stimulus as a tool to revive demand (Palley, et al. 2020). It is almost characteristic for policymakers to turn to Keynesian economics as the crisis caused by covid-19 pandemic is macroeconomic in nature (Baqaee & Farhi, 2020).

The crisis has not only forced us to rethink Keynes' contribution to economics but also Schumpeter's' conceptual framework of creative destruction in a capitalist economy. Another problem looming over mankind is the ecological disturbances that threaten its existence. Unemployment remained central to Keynes' analysis but ecological impact on job security is beyond its scope (Skidelsky, 2020). Hence, renewed interest in Keynesian economics should be green or as it is dubbed as green-keynesianism (Cömert, 2019). Thus, it has become essential for economies to invest in low carbon technologies and on an infrastructure that can withstand climate change (Kyla, 2018). An area o interest in this domain is created by the Green New Deal which talks of investment and generation of green jobs (Skidelsky, 2020 & Cömert, 2019).

3. CONCLUSION

Since, its inception Keynesian economics, although lauded has had trouble occupying space in the mainstream. It has been threatened by the laissez-faire ideology for the longest time and has received undivided attention after the Great Recession of 2008 such that it has yet again received attention in the crisis associated with the pandemic.

The major challenges that economic profession faces are associated with the restructuring economies after the pandemic along with creating sustainable jobs so that climate change does not lead to job insecurity especially in the tropical economies that are primarily agrarian. As these issues are mainly macroeconomic in nature, one can conclude that policy response cannot be generated without intervention of Keynesian economics. Hence, it is necessary to form a perspective on aforementioned areas before it's too late.

Keynesian economics can come to rescue yet again if investments are made in green projects and employment is generated in the renewable energy with the same vigour as jobs were created during any other period of economic expansion. Therefore, future of Keynesian economics in macroeconomic domain should be about restructuring after covid-19 and associated stringencies that led to demand deficiency in almost any major economy along with a prolonged focus on 'green keynesianism' as it has been popularly termed.

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A REVIEW OF WORKING CONDITIONS, WORK & WORK CHALLENGES DURING NEW NORMAL IN PANDEMIC: AN INDIAN PERSPECTIVE

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ABSTRACT

Pandemic has created a new normal for occupational performance in the organization. Understanding the current conditions will make future action suitable for the changes. The current study consist review of twenty-seven papers published in different journals using Google scholar and other reliable resources. The current qualitative study consists of data collected in primary and secondary studies by multiple authors to understand the working conditions in pandemic. The present study provides an understanding of the current working norms, redefined work, raised issues in new job profiles, and solutions to these concerns. The study paves the path for further research in the area of remote working/work from home/telecommuting and developing the virtual organization for more productivity in mitigating the future unseen challenges. The development of new HR practices, company strategies in multiple dimensions of its functions, and success factors in the crisis can be studied as a part of analyzing the impact of operational decisions taken by the organizations.

Keywords: Teleworking, Psychological safety, work from home, remote working, and work challenges.

1. INTRODUCTION

World has encounter new challenges with the COVID-19 spread. Meaning to the life has a shift from being resourceful to be safe and healthy. Existing market and new living concept has great impact in each dimension of human. It has created circumstantial challenges for the corporate world where effective outcomes from the employees are required while they need to maintain new norms of the society. The accelerative thrust (Toffler, 1981) of change due to the pandemic situation has created challenges among the workers and employers to coordinate practice for survival. The decision of lockdown has changed the definition of working, workplace globally. To survive the business in this pandemic understanding of the current situation to the decision-maker and user is needed.

It is difficult to imagine the physical presence of the employees in the premise of an organization. The demands for users' need satisfaction prevailing with same acceleration. The economy has significant impact of commercial and business slowdown due to governance decision over transactions. The current situation demands to look the all business world with a new glass, where virtual market has existence demanding change in each dimension of corporate world. The new virtual platform of services has impact over the working conditions and job profiles of the employment in many organizations. Inevitable nature of change recommends the opportunity for alignment with the need and requirement of change.

The current study will cover the objective of understanding the current occupational working conditions and norms, new forms of work and efficiency in the method of new job performance, challenges encountered in such evolved job opportunities, and how Indian firms are ready to meet with such challenges in the course of action under the pandemic situation.

2. WORK CONDITION, CHALLENGES & SOLUTIONS

2.1 Pandemic and work conditions

Even before the pandemic, there was acceleration in remote working encountered during the last 15 years in the US (Thompson, 2020). As per the Bureau of Statistics, only 29% of working profiles fall eligible for remote working in America including the majority of IT-enabled services. The concerns of remote working fall under the category of social bond breaking between the team members, a threat to psychological safety hindering the performance of the workers. On the other hand, it saves the travel of employees from the place of residence to headquarter of the corporate helping in time-saving and traffic fumes avoidance during the travels. It also helps in variability in an idea as an employee engaged in work being part of their community and do not share the common culture of the organization premises.

Estimation of workers' exposure to the infection due to occupation count 10% (14.4M) per week once and 18.4% (26.7 M) per month in the US. The workers' information being taken from the national employment data merged with the BLOS survey, measuring the frequency of workers' exposure to the infection while performing occupational responsibilities. The study suggests that the proportion of infection possibility emphasizes the

workplace interventions to coordinate with safety concerning the infection spread avoidance (Baker et al., 2020).

The emerging practices during the COVID-19 have provided the option of Work From Home (WFH) at a different level of work positions in organizations (Kniffin et al., 2020). WFH has created adaptation issues for the workers, management of the virtual team is another add on the dimension for management, virtual team management, leadership are evolving during the WFH conditions and different economic and social impacts are identified as a part of pandemic coordination (unemployment, Layoffs, Presentism, economic inequality, stress, and burnout, etc.).

Pandemic turned out to be a stressor in multiple dimensions of employees' working. View of security, danger, danger of disease, infobesity versus obscure, isolate and imprisonment, disgrace and social avoidance, and occupation uncertainty are not many stressors at the ebb and flow purpose of time among the workers. The occupational role development, occupational safety, and health management teleworking, communication optimization and transparency, prevention of stigma, training, prevention of social isolation and management of teleworkers, social support, and development of return to work plan are the strategies to mitigate the work stress generated due to COVID 19 (Hamouche, 2020).

Employment condition of presence in the premise for job performance (job includes non-flexibility for remote working), lack of paid sick leave and income are factors connect with characteristics hindering compliance with the recommendation for the safe workplace in the time of pandemic (Blake et al., 2010). A multivariate regression analysis of 2006, Harvard School of Public Health pandemic being referred to conclude that factors like the non-capability to work from home, lower sick leave payment, and lower income level are associated with following the social distancing recommendations.

2.2 Pandemic and new working norms

More than a year world has faced the different folds of pandemic crisis and yet many unfold are waiting and expected in future. Practices by organizations have taken different platform to make sustainable business in the pandemic duration. Unforeseen future still has dilemmas in organization for new practices to get implemented on full scale. Leaders with new perspective and organizations with open arm to suggestions are able to attain survival but still in a struggle to decide the new dimension facilitating the decision of making new practices as core procedure to mitigate the challenges raised under pandemic situation (Boiral et al., 2021).

Dissatisfaction regarding the job has many dimensions of influence. The work life conflict at the time of pandemic is being identified less relevant to the unjustifiable payments. The concern of employment is prominent and has neglected the concern regarding the unjust pay, altering the relation from the normal situation (Schieman & Narisada, 2021)..

The ongoing pandemic situation has created new norms of working for physical presence related job profiles. Low-tech measures (personal hygiene, self-diagnosis, social distancing, etc.), environmental, administrative control, workforce segmentation, traveling policy framework, contact tracing, use of mobile apps, and testing are the new normal condition of work in different job profiles especially for which physical interaction is necessary (Barnes et al., 2020). To restart the work under the organization premises safety measures to prevent from viruses need to carefully follow by the employer and employee both.

Pandemic has new norms for the organization to regularize it's working. The norms unfold new worker factors, societal factors, workplace factors, and their compliance with ethical standards (Shaw et al., 2020). The reopening of the organization workplace must have an anticipation about worker acceptance for the safety measures taken by the organization for COVID-19 handling. The working place norms must have coordination with the conditions of individual firms defined under the guidelines of the government. More likely flexible norms and conditions for the disadvantaged employees need to be created for providing security along with the safety measures of health.

The impact of COVID-19 can be observed with the change in the scale of job opportunities (Costa Dias et al., 2020). The change element of the job profile is identified with a great difference from 2019 to 2020. The labor-intensive works are in either temporary or permanent danger thus the government intervention is required for managing the challenges of labor-intensive works. The requirement for skilled oriented jobs has been enlarged and demands for training. The organization's forward-looking to resume the previous status required many changes in job profile along with employees enhancing their skills as per the future demands of the industry.

Importance of Human resource development being encountered in the time of pandemic (Li et al., 2020). The angelology has affected the decision making process, leadership competencies altered, new work culture demand to endorse self-care in collegial and supportive work culture, flexible strategy for analysis of post-pandemic impact, work re-design, system rethinking, shift to the virtual working environment, redefining, relooking, etc. are the different suggestive measures for the human resource development to be taken in account for the post survival of the individual in different organizations.

The impact of COVID-19 will have a potential impact on the occupational status, work from home, and occupational mobility dimensions of the work (Kramer & Kramer, 2020). The changes post COVID-19 will have occupational status change providing creation of new supply and demand situation of the worker competencies, work from home will have a new understood dimension of work accepted by the organization in their practices and the segmentation of work into good vs bad jobs will be leading a new labor market condition in the world.

Social distancing a new norm of public gathering is one of the important tools to reduce the rate of influenza spread (Ahmed et al., 2018). Around 23% of cumulative influenza attacks can be reduced by using social distancing measures at the workplace. However other measures can be induced along with social distancing to minimize the spread of influenza and can make the workplace safe for the workers.

2.3 Remote working to mitigate working challenges in pandemic

The count of remote workers has increased to 115% in the duration of ten years from 2005 to 2015 in the US. The practice of remote working by organizations facilitates benefits to organizations and employees in multiple dimensions (Abrahem, 2019). The physical presence of employees in organization premises hinders their performance efficiency at times thus optimal use of resources is served using remote working.

Work from home will lead downfall in the productivity of organizations at the time of pandemic (Stanford University, 2020). A study of randomized 1000 Chinese travel company employees engaged in working in part or full time from home for nine months' duration reveals that the performance hampered by 13% whereas 50% downfall in quitting rate being observed. Engaged in family affairs (child care, household work, etc.) and simultaneously performing the job responsibilities, are two contradicting conditions for the worker to be more productive. Regular team checks, separating work time from family time (managing work-life balance), and majorly concentrating on video calls despite normal calls can be the measures for getting productivity in work from the home condition.

Around 2.5% of workers were engaged in remote working before the pandemic which turns to almost everyone with the possibility of performing remotely is part of such worker's category in the US (Merrefield, 2020). Organizations have tripled their workforce under remote working and will likely continue in the future even after the pandemic. All possible telework being found including non-tech areas so as the expansion of remote working can be laid into non-tech dimensions too. Part-time telework being converted to full time working wherever supported by the job profiles. The in-depth interview of 40 workers reveals that 'the working and home issues inside similar actual space than physical, mental and worldly limits among work and home become obscure' (Basile and Beauregard).

Among the big Multi-National Companies covid-19 concerns being resolved using teleworking into practice (Belzunegui-Eraso & Erro-Garcés, 2020). Companies using teleworking before the pandemic have a lift in the workers and job profiles with teleworking facilities. Other companies with innovative measures enhancing opportunities for teleworking in their jobs assigned to the existing workers. Factor affecting teleworking (Baruch and Nicholson) has environmental safety and legal factor inclusion along with the factors Individual (personality, situation), Organization (strategy, culture), Job (Nature, technology), and Home & family.

Enlarged coverage of pandemic has necessitated the use of teleworking as the most feasible and effective method in the time of COVID-19. The acceptance of this new condition of work is temporary or permanent for the worker depending on the nature of work and its dependency on the physical promises. The major emphasis on telework has created an anxiety-provoking context for many workers, it has also created a misbalance between the personal and professional life, and being a temporary mode of performance it will have limited access to the individual knowledge span. The current pandemic situation has created a rise in demand for teleworking in various fields of operations which were earlier never imagined to be followed in the current manner (Bouziri et al., 2020).

Enhanced remote working practices have created challenges to being a solution to the corporate world in the time pandemic (Barbara Z. Larson et al., 2020). Challenges of remote working include lack of face to face

supervision, lack of access to information, social isolation, and distraction at home. Remote working challenges can be tackled using establish structured daily checks in, providing several different communications in technology options, providing remote social interaction opportunities, provide encouragement and emotional support, etc. for mitigating the concerns raised due to remote working.

Efficiency under telecommuting jobs majorly based on the two information attributes to be specific occupation intricacy and critical thinking and two social qualities as relationship and social help (Golden & Gajendran, 2019). A study of 273 respondents including telecommuters and their supervisors has revealed that the extent of telecommuting on job performance has a positive association for job profiles with complexity, low interdependence, and low social support.

Detachment from the workplace is the new trend followed by remote working in organizations (Felstead & Henseke, 2017). Only 33% of the increment in distant working can be addressed as a development in the information economy, adaptable business, and changed point of view of the business for far off working. The distant working requests higher association responsibility, work fulfillment, work prosperity benefits achieve against the heightening the work and more prominent failure to turn off.

2.4 Indian perspective of remote working
In India remote working being adopted as a new norm by many organizations providing ease to the work accomplishment of the work holder. The survey of 3377 professionals engaged in remote working during the period of lockdown and unfolds of lockdown, due to pandemic reveals that Indian workers find it difficult to cope up with new normal count 40% of the respondents. They find longer working hours counting two out of five respondents. Focus on work is a matter of struggle for one-fourth of the employees. 36% of employees are struggling to strike balance between personal and professional life (LinkedIn News India).

TATA consultancy services decided that their employees to be permanently shifted to work from home will account for 75% by 2025 (Anand, 2020). Organizations opposing earlier now at the time of pandemic identifying work from home as a solution to mitigate the challenges in the pandemic. Different challenges are encountered by the employer in managing the work from home at present. The challenges include work-life balance, physical facility with the employees, network connection for operating remotely, stress enhancement, etc. by the Indian employers.

Work from home is the new reality in India (More than 50% of Corporate India Prefers Working from Home: Research, 2020). 50% of the workers are optimistic for WFH, 55% of them identify social- isolation as a hurdle, 63% found e-relationship with a co-worker is being good or excellent, 75% identifying that WFH facilitates avoidance of commuting and 60% feels that they work for more hours in WFH condition. The survey of 500 workers across the nation reveals the above outcomes.

When WFH is a new reality and IT sector employees are assigned with the flexibility of work there exists lacuna in the capabilities of the workers (2020b). A study of 10,000 job seekers in the IT sector on Mind Match assessment through SCIKEY talent commerce it is found that 99.8% of the IT sector workforce is incapable of working from home. They need in any event one of the measurements as protection from learning and investigating (95%), lacking reasonable relational abilities (65%), and ailing in arranging and execution (71%). Further 16.97 % of representatives are challenge-driven, 40.42% labor force is rationale driven, and 12.7 % strikes for social collaboration discovers WFH being hard for them.

2.5 Implementation & future of remote working
Remote working emerged as a challenge for the different sector for whom establishing the work from home practices are difficult in implementation (Roy, 2020). This has generated the opportunity for new technological era development. The impact can be clearly visualized with around a 300% increase in jobs engaging employees in remote working (ET Now Digital, 2020). Practices like policy-relevant mailers, webinars, teleconferences, virtual team meetings, HR e-connect, activities trackers, counseling helpline, etc. and many new measures are adopted by the organization to get itself fit in the current situation (HRK News Bureau, 2020).

The changing dimensions of working have created new opportunities for the organization to ascertain its practices more technology-friendly. The development from the basic approach of services to customers, product and services development, availability of offerings are the external factors going to get affected by the pandemic in long run. The internal approach towards employees from physical interaction to the internet-based interaction, evaluation, and execution are the changing dimensions of working.

Under the HR practices of any organization the future demands for the redesign of the existing jobs in the organization. The redesign requires the implementation of remote working factors in the job profile of a

different individual which will contribute to creating the standards against which the obtained performances will be measured. The preparation in these dimensions will enhance the capacity of each organization to sustain in any such future contingency. Remote based cultural development, enhancing the employees' performance, assessment of performance, rewarding the employees, counseling the employees, facilitating the health support to employees, and many other fundamental requirements will be addressed through the continuous improvisation in current practices.

DISCUSSION & CONCLUSION

The studies regarding workforce, workplace at the time of pandemic provide that the working norms are needed to be adhering to ensure health safety at the workplace. Working conditions include measures like social distancing to be executed while executing self-care, awareness, self-diagnosis, etc. inside the premises. The impact of the pandemic is potentially affecting the labor force whose job nature requires physical presence in the premise leading to the threat of unemployment and even bread and butter. The solution to this can be the avoidance of gathering within the premise of the organization but is restricted to the specific nature of the job which can facilitate the option of WFH/ remote working.

The feasible jobs for WFH become oriented for such practices temporarily or permanently. The increase in WFH practices is sharp in the global scenario. Such changes have developed the change practices at the job profile level contributing to the new job creations for the future asking for new competencies. The favorable conditions for the employer are that the practice of WFH facilitates the cost reduction in terms of the daily variable cost of the workplace, maintenance of norms alignment of reopening business after lockdown, medical facility cost reduction, etc. While adhering to social distancing norms existing organizational infrastructure can be a hurdle that is solved through the use of remote working/telecommuting/WFH/.

Managing the virtual team, remote level leadership, and enhancing WFH skills are the new challenges for gaining productivity. Issues of WFH like work-life balance, separation of personal and professional life, work-stress, psychological isolation, etc. are a matter of new policy framework on which the organization has to emphasize. Indian scenario of WFH has acceleration in a shift towards remote working but encountering the inefficiency of workers to cope up with the changed conditions. To mitigate the concerns and challenges proper policy need to be frame out by the Human resource development department. To handle the concern of the laborers' government required to intervene in the policy matters of the organization so that job security and health safety can be ensured to the workers.

The study is restricted to the qualitative analysis of the previous researches thus further research can be carried to identify the responsible factors for obtaining the right set of strategies, decisions, and actions in post-pandemic. The future study can be carried in the area of HR policy framing including the job analysis to evaluation, maintenance, and sustainable development of the organization. Changes and impact in the existing nature of job, culture, product, employer-employee relation, etc. related study can be carried for a better understanding of strategies required to mitigating such situations in the future.

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DIRECT SEARCH METHODS TO SOLVE STOCHASTIC OPTIMIZATION PROBLEM

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1   INTRODUCTION:

This paper examines several direct search methods for optimization, "direct" in the sense that the algorithms use minimal information about the loss function. These direct methods have the virtues of being simple to implement and having broad applicability. Further, it is sometimes possible to make rigorous statement about the convergence properties of the algorithms, which is not always possible in more complex procedures. The information required to implement these methods is essentially only input-output data where θ is the input and $Z(\theta)$ (noise-free) or $y(\theta)$ (noisy) is the output. Further, the underlying assumptions about L are relatively minimal. In particular, there are no requirements that the gradient of L be computable (or even that the gradient exist) or that L be unimodal (i.e., that L have only one local optimum, corresponding to the global optimum). This paper focuses on two distinct types of popular direct search methods. The first is random search and the specialty is based on the geometric notion of a simplex. Note that when the random search or nonlinear simplex methods are applied to problems with differentiable L, these techniques make no use of the gradient that exists. Avoiding the use of the gradient can often significantly ease implementation. With the exception of some of the discussion on the nonlinear simplex method, the algorithms of this chapter have at least one of the two characteristics of stochastic search and optimization noisy input information or injected algorithm randomness. For purposes of algorithm evaluation by Monte Carlo, pseudorandom numbers generated via a computer algorithm are used to produce both the noise and the injected randomness. For purposes of actual application to a physical system producing its own randomness, pseudorandom numbers are used only for the injected randomness. There are never likely to be fully acceptable automated stopping criteria for stochastic search algorithms. For that reason, this paper will generally emphasize algorithm comparisons and stopping based on "budgets" of function evaluations. Nonetheless, sometimes one may wish to augment function budgets or analyst "intuition" via some automated approach. Two common stopping criteria are given below. Let r\ represent a small positive number, N be the number of iterations for which the algorithm should be "stable," and θ_k be the estimate for θ at iteration k. An algorithm may be stopped at iteration n > N when, for all 1 <j < N, at least one of the two criteria below hold:

$$\left| L(\theta_n) - L(\theta_{n-j}) \right| \le \eta, \left\| \theta_n - \theta_{n-j} \right\| \le \eta$$

These criteria express the fact that the algorithm has "settled down" in some sense. The first criterion above is useful when noise-free loss measurements are available, while the second criterion is useful in noise-free and noisy cases. Although the criteria have some intuitive appeal, they provide no guarantee of the terminal iterate θ_n being close to an optimum $\theta*$.

2   SOME ATTRIBUTES OF DIRECT RANDOM SEARCH

Random search methods for optimization are based on exploring the domain θ in a random manner to find a point that minimizes $L = Z(\theta)$. These are the simplest methods of stochastic optimization and can be quite effective in some problems. Their relative simplicity is an appealing feature to both practitioners and theoreticians. These direct random search methods have all or some of the following advantages relative to most other search methods. Some of these attributes were mentioned in the prescient paper of Karnopp (1963):

(i)   Ease of programming. The methods described below are relatively easy to code in software and can thereby significantly reduce the human cost of an optimization process (not to be ignored in practice, but often ignored in published results comparing the efficiency of one algorithm against another!).

(ii)   Use of only L measurements. The reliance on L measurements alone can significantly reduce the incentive to pick a loss function largely for analytical convenience—perhaps at a sacrifice to the true optimization goals—so that gradients or other ancillary information may be computed. Karnopp (1963) aptly calls this a reduction in "artful contrivance."

(iii)   Reasonable computational efficiency. Although not generally the most computationally efficient algorithms in practical problems, the algorithms can often provide reasonable solutions fairly quickly, especially if the problem dimension p (= dim(θ)) is not too large. This is especially true in those direct

search algorithms that make use of some local information in their search (e.g., random search algorithms B and C below). For example, as demonstrated in Anderssen and Bloomfield (1975), random search may be more efficient than corresponding deterministic algorithms based on searches over multidimensional grids when p is large. The solution from a random search method can usually be augmented with some more powerful—but perhaps more complex— search algorithm if a more accurate solution is required. In fact, the random search algorithms may provide a means of finding "good" initial conditions for some of the more sophisticated algorithms to be presented later. For example, as demonstrated in Anderssen and Bloomfield (1975), random search may be more efficient than corresponding deterministic algorithms based on searches over multidimensional grids when p is large. The solution from a random search method can usually be augmented with some more powerful—but perhaps more complex—search algorithm if a more accurate solution is required. In fact, the random search algorithms may provide a means of finding "good" initial conditions for some of the more sophisticated algorithms to be presented later.

(iv) Generality. The algorithms can apply to virtually any function. The user simply needs to specify the nature of the sampling randomness to allow an adequate search in θ . Thus, if θ is continuous valued, the sampling distribution should be continuous (e.g., Gaussian or continuously uniform on θ); likewise, a discrete-valued θ calls for a discrete sampling distribution with nonzero probability of hitting the candidate points and a hybrid θ calls for the appropriate mix of continuous and discrete sampling distributions.

(v) Theoretical foundation. Unlike some algorithms, supporting theory is often available to provide guarantees of performance and guidance on the expected accuracy of the solution. In fact, the theory may even be exact in finite samples, which is virtually unheard of in the analysis of other stochastic algorithms.

3 THREE ALGORITHMS FOR RANDOM SEARCH
Beginning with the most basic algorithm, this subsection describes three direct random search techniques. Because direct random search is a large subject unto itself, only a small selection of algorithms is being presented here in order to keep this subsection of manageable length. The three algorithms here are intended to convey the essential flavor of most available direct random search algorithms. The methods of this subsection assume perfect (noise-free) values of L. In the noise-free case, it can be shown that many random search methods converge to an optimum θ * in one of the probabilistic senses – almost surely (a.s.), in probability (pr.), or in mean square (m.s.)— as the number of L evaluations gets large. Realistically, however, these convergence results may have limited utility in practice since the algorithms may take a prohibitively large number of function evaluations to reach a value close to θ *, especially if p is large. This is illustrated below. Nevertheless, the formal convergence provides a guarantee not always available in other approaches. The simplest random search method is one where we repeatedly sample over θ such that the current sampling for θ does not take into account the previous samples. This "blind search" approach does not adapt the current sampling strategy to information that has been garnered in the search up to the present time. The approach can be implemented in batch (nonrecursive) form simply by laying down a number of points in θ and taking the value of θ yielding the lowest Z value as our estimate of the optimum. The approach can also be implemented in recursive form as we illustrate below. The simplest setting for conducting the random sampling of new (candidate) values of θ is when θ is a hypercube (a p-fold Cartesian product of intervals on the real line) and we are using uniformly generated values of θ . The uniform distribution is continuous or discrete for the elements of θ depending on the definitions for these elements. In fact, this particular (blind search) form of the algorithm is unique among all general stochastic search and optimization algorithms in this book: It is the only one without any adjustable algorithm coefficients that need to be "tuned" to the problem at hand. For a domain θ that is not a hypercube or for other sampling distributions, one may use transformations, rejection methods, or Markov chain Monte Carlo to generate the sample θ values. For example, if θ is an irregular shape, one can generate a sample on a hypercube superset containing θ and then reject the sample point if it lies outside of θ . A recursive implementation of the simple random search idea is as follows. This algorithm, called algorithm A here, applies when θ has continuous, discrete, or hybrid elements.

4 ALGORITHM A: SIMPLE RANDOM ("BLIND") SEARCH
Step 0. (Initialization) Choose an initial value of Θ, say θ $_0$ ∈ Θ, either randomly or deterministically. (If random, usually a uniform distribution on Θ is used.) Calculate L (θ $_0$) • Set k = 0.

Step 1. Generate a new independent value $\theta_{new}(k+1) \in \Theta$, according to the chosen probability distribution. If

$$L\left(\left(\theta_{new}(k+1)\right)\right) < L(\theta_k), \text{ set } \theta_{k+1} = \theta_{new}(k+1) \text{ - Else, take } \theta_{k+1} = \theta_k$$

Step 2. Stop if the maximum number of L evaluations has been reached or the user is otherwise satisfied with the current estimate for θ via appropriate stopping criteria; else, return to step 1 with the new k set to the former k + 1. Algorithm A is the simplest random search in that the sampling generating the new θ value at each iteration is over the entire domain of interest. The sampling does not take account of where the previous estimates of θ have been. The two algorithms below, although still simple, are slightly more sophisticated in that the random sampling is a function of the position of the current best estimate for θ . In this way, the search is more localized in the neighborhood of that estimate, allowing for a better exploitation of information that has previously been obtained about the shape of the loss function. Such algorithms are sometimes referred to as localized algorithms to emphasize their dependence on the local environment near the current estimate for 0. This terminology is not to be confused with the global versus local algorithms discussed in Chapter 1, where the emphasis is on searching for a global or local solution to the optimization problem. In fact, sometimes a localized algorithm is guaranteed to provide a global solution, as discussed below following the presentation of the first localized algorithm. Algorithm B is the first of the two localized algorithms we consider. This algorithm was described in Matyas (1965) and Jang et al. (1997).

5   ALGORITHM B: LOCALIZED RANDOM SEARCH

Step 0 (Initialization) Pick an initial guess $\theta_0 \in \Theta$, either randomly or with prior information. Set k = 0.

Step 1 Generate an independent random vector $d_k \in R^p$ and add it to the current θ value, θ_k. Check if $\theta_k + d_k \in$

Θ. If $\theta_k + d_k \notin \theta$, generate a new $d_{\ddot{e}}$ and repeat or, alternatively, move $\theta_{\ddot{e}} + d_{\ddot{e}}$ to the nearest valid point

within Θ. Let Θ_{new} (k+1) equal $\theta_k + d_k \in \Theta$ or the aforementioned nearest valid point in Θ.

Step 2   If $L(\Theta new(k + 1)) < L(\Theta_k)$, set $\theta_{(k+1)} = \theta_{new}(k+1)$; else, set $\theta_{k+1} = \theta_k$.

Step 3 Stop if the maximum number of L evaluations has been reached or the user is otherwise satisfied with the current estimate for 9 via appropriate stopping criteria; else, return to step 1 with the new k set to the former k + 1. Although Matyas (1965) and others have used the (multivariate) normal distribution for generating d_k, the user is free to set the distribution of the deviation vector d_k. The distribution should have mean zero and each component should have a variation (e.g., standard deviation) consistent with the magnitudes of the corresponding Θ elements. So, for example, if the magnitude of the first component in Θ lies between θ and 0.05 while the magnitude of the second component is between θ and 500, the corresponding standard deviations in the components of d ë might also vary by a magnitude of 10,000). This allows the algorithm to assign roughly equal weight to each of the components of Θ as it moves through the search space.

Although not formally allowed in the convergence theorem below, it is often advantageous in practice if the variability in d ë is reduced as k increases. This allows one to focus the search more tightly as evidence is accrued on the location of the solution (as expressed by the location of our current estimate Θ_k). A simple implementation of this idea would be to reduce the variances by a factor such as k when the normal distribution is used in generating the dk . For the numerical studies below, we use the simple (constant variance) sampling,d $_k \sim N(0, p^2 Ip)$ for all k where p^2 represents the (common) variance of each of the components in d $_2$.

The convergence theory for the localized algorithms tends to be more restrictive than the theory for algorithm A. Solis and Wets (1981) provide a theorem for global convergence of localized algorithms, but the theorem conditions may not be verifiable in many practical applications. Their theorem would, in principle, cover both algorithm B and the enhanced algorithm C below. Other results related to formal convergence to global optima of various localized random search algorithms appear, for example, in Yakowitz and Fisher (1973) and Zhigljavsky (1991). An earlier theorem from Matyas (1965) (with proof corrected in Baba et al., 1977) provides for global convergence of algorithm B if Z is a continuous function. The convergence is in the "in probability" (pr.) sense. Algorithm B above might be considered the most naive of the localized random search algorithms. More sophisticated approaches are also easy to implement. For instance, if a search in one direction increases Z, then it is likely to be beneficial to move in the opposite direction. Further, successive iterations in a direction that tend to consistently reduce Z should encourage further iterations in the same direction. Many algorithms exploiting these simple properties exist (e.g., Solis and Wets, 1981; Zhigljavsky, 1991; Li and Rhinehart, 1998; and the nonlinear simplex algorithm). An extensive survey emphasizing such algorithms developed prior to 1980 is given in Schwefel (1995). An example algorithm is given below (from Jang et al., 1997), which is a slight simplification of an algorithm in Solis and Wets (1981). The full Solis and Wets algorithm includes an

even greater degree of adaptivity to the current environment, but this comes at the expense of more complex implementation.

Algorithm C: Enhanced Localized Random Search

Step 0. (Initialization) Pick an initial guess $\theta_0 \in \Theta$, either randomly or with prior information. Set k = 0. Set bias vector $b_0 = 0$.

Step 1. Generate an independent random vector d_k and add it and the θ bias term b_k to the current value θ_k (as in algorithm B, a standard distribution for d_k is N(0, p^2 Jp)). Check if $\theta_k + b_k + d_k \in \Theta$. If $\theta_k + b_k + d_k{}^k \notin \Theta$, generate a new d_k and repeat; alternatively, move $\theta_k + b_k + d_k$ to the nearest valid point within Θ. Let Θnew(k+1) equal $\theta_k + b_k + d_k \in \Theta$ or the above-mentioned nearest valid point in Θ.

Step 2. If $L(\theta_{new}(k + 1)) < L(\theta_k)$, set $\theta_{k+1} = \theta_{new}(k+1)$ and $b_{k+1} = 0.2b_k + 0.4d_k$; go to step 5. Otherwise, go to step 3.

Step 3. Analogous to step 1, let Θ'new(k + 1) = $\theta_k + b_k - d_k \in \theta$ or its altered version within Θ. If Θ (Θ'new(k + 1)) $< L(\theta_k)$, set $\theta_{k+1} = \theta$'new(k + 1) and $b_{k+1} = b_k - 0.4d_k$; go to step 5^2. Otherwise, go to step 4.

Step 4. Set $\theta_{k+1} = \theta_k$ and $b_{k+1} = 0.5b_k$ - Go to step 5.

Step 5. Stop if the maximum number of L evaluations has been reached or the user is otherwise satisfied with the current estimate for Θ via appropriate stopping criteria; else, return to step 1 with the new k set to the former k+1.

Example.—Random search algorithms applied to Rosenbrock function. Consider the well-known Rosenbrock test function in the optimization literature. This test function was first presented in Rosenbrock (1960) for the p = 2 setting, with higher-dimensional extensions given in, among other places. This test function has an interesting shape in that the solution lies in a curved valley when considered in two-dimensional space. For general p, the function has the fourth-order polynomial form

$$L(\theta) = \sum_{i=1}^{p/2} \left[100(t_{2i} - t_{2i-1}^2)^2 + (1 - t_{2i-1})^2 \right]$$

where θ = [t\, t2,..., tp] andp is divisible by 2.

Let us consider a problem where p = 10. Note that –L (θ *) = 0 at

θ * = [1, 1,..., l] ^{t} . Let the constraint set be the Cartesian product of intervals [-4, 4] : θ = [-4, 4]^{10}. Table 2.5 presents the results of the study based on 40 independent runs for each algorithm. Each run of algorithms A and B uses 1000 loss evaluations; algorithm C is terminated at the 1000 th loss evaluation or the first possible loss after the 1000 th (it is not possible to specify a priori the exact number of measurements needed by algorithm C). Each run was started at the initial condition

Θ_0 = [-1.2, 1,-1.2, 1,..., 1] ^{t} (so L(θ $_0$) = 121; this is a common initial condition in numerical studies with this function). The confidence intervals are computed in the manner of Example 2.3. In algorithm A, standard uniform sampling over 0 is used. For algorithms B and C, the perturbations are in the standard form

$d_k \sim N(0, p^2 /I_0)$, with p = 0.05.

Algorithm A does not move away from the initial condition in any of the 40 runs due to the large size of the sampling region (relative to regions of Θ that produce improvements in the loss function). That is, not one of the 40,000 total loss evaluations from uniform random sampling in Θ produced a loss value lower than the initial value. Algorithms B and C perform better that algorithm A, with both B and C showing significant improvement relative to the initial condition. It is clear, however, that more loss evaluations are required to bring the solution close to L(Θ*) =0. The focus in this paper has been some of the popular search methods for optimization based only on direct measurements of the loss function. We considered two broad types of such algorithms. The first is random search, based on searching through the domain O using randomly generated

steps, usually generated in a Monte Carlo fashion via a pseudorandom number generator. The second is a geometrically motivated search based on the idea of a simplex.

6   CONCLUSION

The methods of this paper are versatile and broadly applicable. Because they require only loss measurements, they are often easier to implement than other methods that require relatively detailed information about the loss function (e.g., gradient information). In particular, a user might find the localized random search algorithm B to be useful in many problems, especially if only modest precision is required in the solution. This algorithm is relatively easy to implement and has a long record of reasonable practical efficiency.

Abstract. This paper focuses on relatively simple direct search methods for solving the optimization problem of minimizing a loss function $L = Z(\theta)$ subject to the parameter vector 0 lying in some set 0.

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COMPARITIVE ECONOMICS OF FARM PONDS BENEFICIARY AND NON-BENEFICIARY FARMERS IN BHATKULI TAHASIL OF AMRAVATI DISTRICT

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ABSTRACT

Farm pond plays important role in rained region where annual rainfall is more than or equal to 500-700 mm. The study was carried out to examine the impact of farm pond on beneficiary and non-beneficiary farmers in Amravati district of Maharashtra statea representative randon sample of 120 farmer were selected by survey method.The study revealed that per ha net return received from tur and gram crop was highest Rs 52886.32 and Rs 4906.85 for beneficiary and Rs 27080.92 and Rs 29944.66 for non beneficiary farmers respectively. The value of R^2 for beneficiary and non beneficiary farmer was 0.80 and 0.59 respectively. It indicate that higher factor productivity for beneficiary due to farm pond irrigation it reflects in terms of yield and revenue.

Keywords: Farm pond, beneficiary, non beneficiary

INTRODUCTION

Farm ponds have a significant role in rain fed regions where annual rainfall is more than or equal to 500 mm. If average rainfall (AAR) varies between 500 to 750 mm, the farm ponds with capacity of 250 to 500 m^3 can be constructed. If AAR is more than 750 mm, the farm ponds with capacity more 500 m^3 can be planned particularly I black soil regions without lining. It was observed from the field experience and if rainfall pattern changes; at least two to three rainfall events producing considerable runoff are possible in a season making farm ponds an attractive proposition. In high rainfall semi – arid regions, these structures can be made use enterprises like protective/supplemental irrigation, fish culture or duck farming integrated with poultry. These structures provide localized water and food by enhancing the crop productivity and climate resilience. Moreover, farm ponds conserve the natural resources like soil and nutrients apart from water and acts as flood control structure by reducing peak flows in the watersheds or given area of catchment. So, present study was carried out know the impact of farm pond on beneficiary and non – beneficiary farmers in Maharashtra.

Objectives

1. To examine the economics of production of major crops of selected farmers.

2. To examine the impact of farm ponds on productivity of various inputs.

METHODOLOGY

The present study was confined to Amravati district of Vidarbha region. The two tahasil (Bhatkul and Daryapur) was selected purposively because concentration of farm pond farmers in this tahasil was more. For this study 60 beneficiary and 60 non beneficiary farmers were selected randomly from these tahasil.Thus the data were collected for the year 2017-18 by using pre tested interview schedule. Two irrigated crop namely, Tur and Gram was selected for present study. The cost concept in brief are Cost, cost B and cost c was use to workout the economics of selected crops.

Production function analysis:

The impact of farm pond activity and productivity of various inputs was determined by using the production function analysis where per farm production function for beneficiary and non-beneficiary farmers was also estimated.

$$Y = ax1^{b1}\ x2^{b2}\ x3^{b3}\ x4^{b4}x5^{b5}\ldots\ldots.xn^{bn}.\ en$$

Where,

Y = Gross income in Rs. per farm.

X1 = Land area in hectares per farm.

X2 = Human labour in days per farm.

X3 = Bullock labour in days per farm.

X4 = Expenditure on manure and fertilizer in Rs. per farm

X5 = Working capital in Rs. Per farm.

a = Intercept.

b1 to bn= Regression coefficient of the concerned factors

RESULTS AND DISCUSSION
Per ha cost of cultivation of Tur of beneficiary and non beneficiary farmer
The per ha cost of cultivation of tur of selected beneficiary and non beneficiary farmer was workout by using cost concept and presented in table 1.

Table 1. Cost of cultivation of tur for selected farm ponds beneficiary and non - beneficiary farmers

(Rs per ha)

Sr. No.	Particulars	Beneficiary	Non Beneficiary
1	Hired human labour		
	Male	4958.33 (8.41)	4644.33 (9.95)
	Female	4373 (7.42)	4047.14 (8.67)
	Total Human labour	9331.33 (15.83)	8691.47 (18.62)
2	Bullock labour	2361.667 (4.40)	2789.837 (5.97)
3	Machinery	2613.887 (4.43)	2176.19 (4.66)
4	Seed	4735.833 (8.04)	2805.95 (8.21)
5	Manure	4741.667 (8.05)	5034.653 (10.78)
	N	1513.15 (2.56)	1460.527 (3.12)
	P	2033.717 (3.45)	1941.11 (4.15)
	K	331.3733 (0.56)	322.6367 (0.69)
7	Irrigation	1796.387 (3.05)	367.6167 (0.78)
8	Plant protection	2767.22 (4.69)	2361.903 (5.06)
9	Land revenue	181.0467 (0.30)	140.88 (0.30)
10	Depreciation	2040.723 (3.46)	1033.427 (2.21)
11	Int. on working capital @ 6 % per annum	966.7833 (1.64)	838.55 (1.79)
12	COST "A"	35400.64 (60.10)	29978.9 (66.45)
13	Rental value of land 1/6th gross produce	18449.77 (31.32)	11978.31 (25.66)
14	Int. on fixed capital @ 10% per annum	2730.123 (4.63)	1280.563 (2.74)
15	COST "B"	56580.53 (96.06)	43237.77 (94.86)
16	Family labour charges		

	Male		1384.367 (2.35)	1452.487 (3.11)
	Female		932.78 (1.58)	943.9567 (2.02)
17	COST "C"		58897.68 (100)	45634.22 (100)

It is observed from the table 1 that, the per ha cost of cultivation of Tur for beneficiary and non beneficiary farmer was Rs 58897.68/- and Rs 45634.22 respectively.

The major contribution in total cost was higher human labour i.e. 15.83 and 18.62 per cent followed by manure and seed.

Table 2. Cost of cultivation of gram for selected farm ponds beneficiary and non - beneficiary farmers
(Rs. per hectare)

Sr. No.	Particular	Unit	Beneficiary	Non Beneficiary
1	Hired human labour			
	Male	Days	4047.77 (6.73)	3774.99 (7.33)
	Female	Days	5351.00 (8.90)	5229.16 (10.16)
	Total Human labour		9398.77 (15.63)	9004.15 (17.49)
2	Bullock labour	Days	1760.00 (2.92)	2447.22 (4.75)
3	Machinery	Hrs.	2974..99 (4.95)	2513.88 (4.88)
4	Seed	Kg.	7929.85 (13.19)	8148.14 (15.84)
5	Manure	Qtl.	3545.83 (5.90)	4055.55 (7.88)
6	Fertilizer			
	N	Kg.	955.71 (1.59)	786.27 (1.52)
	P	Kg.	1153.04 (1.99)	1184.44 (2.30)
	K	Kg.	92.79 (0.15)	87.24 (0.16)
7	Irrigation	Rs.	2722.22 (4.53)	531.016 (1.03)
8	Plant protection	Rs.	2997.49 (4.90)	3141.66 (6.10)
9	Miscellaneous	Rs.	257.48 (0.42)	284.72 (0.55)
10	Land revenue	Rs.	166.90 (0.27)	140.88 (0.27)
11	Depreciation	Rs.	2040.72 (3.39)	1033.42 (2.00)
12	Int. on working capital @ 6 % per annum	Rs.	1013.64 (1.68)	965.52 (1.87)
13	COST "A"	Rs	37009.48 (61.59)	34338.31 (66.75)
14	Rental value of land 1/6th gross produce	Rs.	18026.44 (30.00)	13422.94 (26.09)
15	Int. on fixed capital @ 10% per annum	Rs.	2730.12 (4.54)	1280.56 (2.48)

16	COST "B"	Rs.	57766.04 (96.14)	49482.00 (96.19)
17	Family labour charges			
	Male	Days	1384.36 (2.30)	1452.48 (2.82)
	Female	Days	932.78 (1.55)	943.95 (1.83)
18	COST "C"	Rs.	60083.19 (100)	51438.26 (100)

It is observed from the table 2 that, the per ha cost of cultivation of Gram for beneficiary and non beneficiary farmer was Rs 60083.19/- and Rs 51438.26 respectively.

The major expenditure in total cost was higher human labour i.e. 15.63 and 17.49 per cent followed by seed.

Table 3. Economics of selected crop of Beneficiary and non beneficiary

(Rs. per hectare)

Sr. No.	Particulars	Tur		Gram	
		Beneficiary	Non Beneficiary	Beneficiary	Non Beneficiary
1.	Value of main produce	95000	60000	100000	75000
2.	Value of By - produce	16784	12715.14	19160.04	6382.92
3.	Value of gross produce	111784	72715.14	109160.04	81382.92
4.	Total cost				
	Cost 'A'	35400.64	29978.9	37009.48	34338.31
	Cost 'B'	56580.53	43237.77	57766.04	49482
	Cost 'C'	58897.68	45634.22	60083.19	51438.26
5.	Net return over				
	Cost 'A'	76383.36	42736.24	72150.56	47044.61
	Cost 'B'	55203.47	29477.37	51394	31900.92
	Cost 'C'	52886.32	27080.92	49076.85	29944.66
6.	Input output ratio at				
	Cost 'A'	3.15	2.42	2.94	2.37
	Cost 'B'	1.97	1.68	1.88	1.64
	Cost 'C'	1.88	1.59	1.81	1.58

It is observed from the table 3 that ,the per ha net return received from Tur at cost c was Rs 52886.32/- and 27080.92/- for beneficiary and non beneficiary farmer respectively. The input output ratio was 1.88 and 1.59.

In case of Gram the net return received was more Rs 49076.85/- to the beneficiary farmer as compared to non beneficiary farmer Rs 29947.66, It is also observed from the table that the input output ratio was more 1.81 in beneficiary farmer was compared to non beneficiary i.e. 1.58. The net return of the beneficiary was more as compare to non beneficiary farmer, which indicate the higher profit of beneficiary farmer due to irrigation facility available through farm pond. It leads to doubling the farmer income

CONCLUSION
1. Per hectare cost of cultivation in non -beneficiary farmer for tur crop at overall level was Rs.45634.22. i.e. cost c. in beneficiary farmers Rs.58897.68 was higher the cost of cultivation in beneficiary farmers as compared non- beneficiary.

2. Per hectare cost of cultivation for gram in non-beneficiary farmers at overall level was Rs. 51438. 26 i.e. cost c. in beneficiary farmers it was Rs. 60083.19. Higher the cost of cultivation in beneficiary farmers as compared to non-beneficiary farmers.

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CORRELATION BETWEEN ATTENDANCE, HOME ASSIGNMENT AND MID-TERM EXAMINATION SCORE AMONG THE BASIC. B.SC 2nd YEAR NURSING STUDENTS.

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ABSTRACT

Background: Every day a student abstentesium is lost opportunity for learning. Too many absences not only can affect achievement for the absent student but also can disrupt learning for the entire class. While teachers play a key role. Among higher education instructors it is common to strongly encourage students to attend to their classes, so that students can learn more and gain better grades. Still, many classes experience a high degree of absenteeism. The connection between class attendances on student learning has received considerable attention, and a clear and positive relationship between class attendance and course grades has been established. Aim- To evaluate the relationship between class attendance, home assignment and midterm examination score on student's learning. OBJECTIVES: 1.To evaluates correlation between attendance and home assignment. 2.To evaluate correlation of attendance with mid-term examination score. 3.To evaluate the correlation of home assignment score with mid-term examination score. 4.To evaluate correlation of attendance with home assignment and mid-term examination score. Research design: - Analytical study Setting of the study: - Smt.Radhikabai Meghe Memorial college of Nursing and SHPER . Sample Size: - 50 sample. Sample: - 2nd year Basic.B.sc nursing students. Sampling Technique: - Simple Random Sampling. Method of data collection: Student Assignment score /Attendance and mid-term examination score. Results: On analyzing data, The finding of the present study showed the positive correlation between the attendance, home assignment and mid-term examination score of Basic BSc 2nd year nursing students the 'r' for given data are calculated as 0.63.Conclusion- Significant correlation found in the study. So, for better academic performance of the students there is no better alternative of attending the classes.

Key word- Abstentesium, Attendance, Home assignment score,mid-term examination score

INTRODUCTION-

Student absenteeism in the class is a lost opportunity for learning and also affects scores in examinations. In our University, during UG induction programme all students are oriented regarding the attendance, internal assignment and about the examination pattern. All are encouraged to attend every class, if the less attendance is there, student is detain and are not eligible to appear in the examination.

According to Merrimum dictionary absenteeism defined as a tendency to be away from school without a good reason towards perform or habit of being absent from school or college. The students those who are not attending the school, college and University are called as absent. Some of the students come in University but not attend the classes also called as absent. Most of the students remain absent in the class make a habit, this habitual act of students is called absenteeism. Although there are many factors which effect on student's performance either related to personal life or educational setting but the effects of absenteeism on students performance. Attendance plays an important role in encouraging and enhancing students performance because it helps the students to submit their assignment on time, increase the test score of the student, improve the student GPA, increase the student confidence , increase their understanding of basic concepts, easily understand every point, student achieve greater understanding and improve coordination with teachers and peers. These all the problem overcome by improving the student's attendance and reducing the absenteeism. Student's class participation becomes affected due to absenteeism[1](Hussain, 2017).

Aim- To evaluate the relationship between class attendance, home assignment and midterm examination score on student's learning.

OBJECTIVES-

1. To evaluates correlation Jun between attendance and home assignment.

2. To evaluate correlation of attendance with mid-term examination score.

3. To evaluate the correlation of home assignment score with mid-term examination score.

4.   To evaluate correlation of attendance with home assignment and mid-term examination score.

METHODOLOGY

Research design – Analytical Research design

Sample   **--** Students of Basic.B.sc 2nd year nursing

Sample size   **--** Sample consists of 50 students of Basic.B.sc 2nd year nursing

Setting of the study – The setting of this proposed study was the Smt.Radhikabai Meghe Memorial college of Nursing and SHPER, Datta Meghe Institute of Medical Sciences (Deemed to be University), Sawangi (M), Wardha.

Sampling technique - The sampling technique used in this study was Simple Random Sampling from class roll register.

METHOD OF DATA COLLECTION

Step-I- The participant was explained about the purpose of the study. Written consent was obtained before recruiting the subjects. The didactic lecture was conducted on topic, Review of communication and Interpersonal relationship. Total Six hours were required to complete these topics. At the end of lecture attendance was marked. **Step-II**- After completion of the topics the home assignment was given to all participants which include MCQ- 6 (6 marks), BAQ-4 (8marks) and SAQ-2(6 marks) total 20 marks. The submission period allotted was 7 days. The collected home assignment was evaluated and score distributed. **Step-III**- The ensuring Mid-term examination score was collected and compare with the home assignment score and attendance. All collected data was tabulated and analyzed.

ANALYSIS

The data analysis was planned to include descriptive and inferential statistics. The following plan of analysis was developed with opinion of experts. Karl Pearson correlation coefficient was used for the statistical positive and negative correlation, by using SPSS (17.0).

RESULTS

The data are based on the objectives of the study. Data presented under the following headings.

Section I: Assess the attendance of Basic BSc 2nd year Nursing Students.

Section II: Assess the home assignment score of Basic BSc 2nd year Nursing Students

Section III: Evaluates correlation between attendance and home assignment.

Section IV: Assess the mid-term examination score of Basic BSc 2nd year Nursing Students.

Section V: Evaluate correlation of attendance with mid-term examination score

Section VI: Evaluate the correlation of home assignment score with mid-term examination score.

Section VII: Evaluate correlation of attendance with home assignment and mid-term examination score.

Section VIII: Analysis of feedback of Basic B Sc 2nd year nursing students

SECTION I

Assess the attendance of basic bsc 2nd year nursing students.

This section deals with the assessment of class attendance of Basic BSc 2nd year Nursing Students. The level of class attendance is divided under following heading low, moderate, very good, good, and excellent.

Table 1: Assessment with Attendance, Home assignment and Mid-term examination score

n=50

Attendance	Percentage Attendance (Range)	Frequency (f)	Percentage (%)	Mean of Home Assignment	Mean of Mid-term examination score
Excellent	≥80	44	88	16.0	47.3
Very good	70-79%	0	0	0	0
Good	60-69%	4	8	9.7	40.75

Moderate	50-59%	1	2	7	39
Low	<50	1	2	10	47
Minimum Attendance (%)	17				
Maximum Attendance (%)	100				
Mean score	90.6±16.1				
Mean Percentage	90.6				

Table no.1: shows that 88% of the students show the excellent attendance and mean score of home assignment show 16.0 and mean score of midterm examination show 47.3, 8% of the students show good attendance and mean score of home assignment show 9.7 and mean score of midterm examination show 40.7, 2% of the students shows good attendance and mean score of home assignment show 7 and mean score of midterm examination show 39 and 2% of the students shows low attendance(below 50) and mean score of home assignment show 10 and mean score of midterm examination show 47 mean score of respectively. Minimum attendance of the Basic Bsc 2nd year nursing students was 17 and maximum attendance was 100, mean score of attendance was 90.6±16.1.

SECTION II
Assess the home assignment score of basic bsc 2nd year nursing students.

This section deals with the assessment of home assignment of Basic BSc 2nd year Nursing Students. The level of home assignment score is divided under following heading poor, average, very good, good, and excellent.

Table 2: Assessment with Home assignment Score

n=50

Home assignment	Score (Range)	Percentage score(Range)	Frequency (f)	Percentage (%)
Excellent	>17	81-100%	29	58
Very good	14-17	61-80%	3	6
Good	10-13	41-60%	15	30
Average	6-9	21-40%	3	6
Poor	< 6	0-20%	0	0
Minimum score	7			
Maximum score	19			
Mean score	15.2±3.9			
Mean Percentage	80.5			

Table no.2 shows that 31% of the students show the excellent in home assignment score, 3% of the students show very good home assignment score, 15% of the students shows good home assignment score and 1% of the students shows average home assignment score and 0 % of the students show poor home assignment score respectively. Minimum home assignment score of the Basic Bsc 2nd year nursing students was 7 and maximum home assignment score was 19, mean score of attendance was 15.2+3.9.

SECTION III
Evaluates correlation between attendance and home assignment.

This section deals with the Evaluates correlation between attendance and home assignment among the Basic BSc 2nd year nursing students by applying Pearson's Correlation Coefficient test.

Table 3: Correlation between attendance and home assignment among the Basic BSc 2nd year Nursing students

n=50

Basic B Sc Nursing Students	Mean	SD	r-value
Attendance	90.62	16.17	
Home Assignment	15.23	3.98	0.69

Table no.3 shows the correlation between attendance and home assignment score among the Basic BSc 2nd year nursing students. The 'r' for given data are calculated as 0.69 respectively at 95% level of significance. The normal value of 'r' ranges between -1< 0<1. Thus the given data shows positive correlation between attendance and home assignment score.

Graph No.1: Correlation between attendance and home assignment among the Basic. BSc 2nd year nursing students
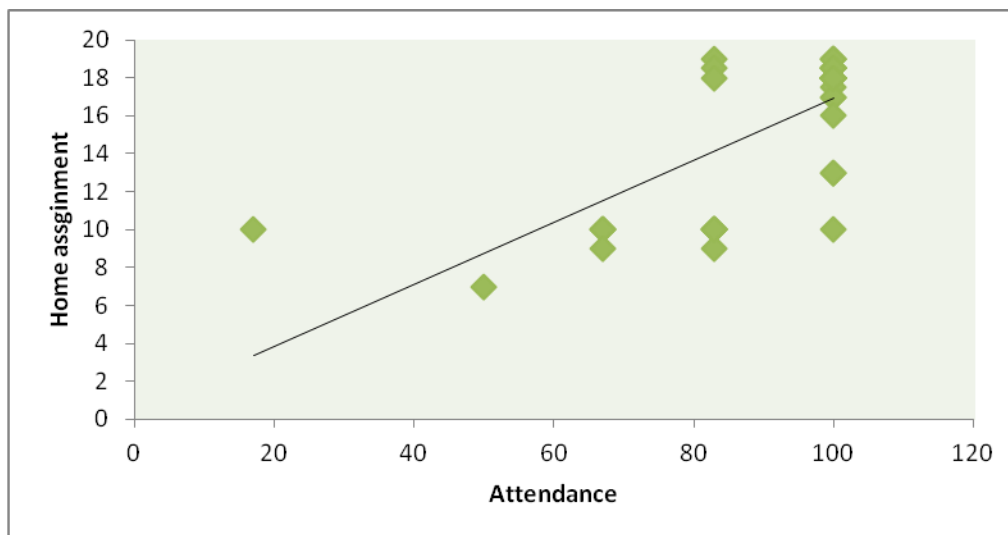
SECTION VI
Assess the mid-term examination score of basic bsc 2nd year nursing students.

This section deals with the assessment of home assignment of Basic BSc 2nd year Nursing Students. The level of mid-term examination score is divided under following heading poor, average, good, and excellent.

Table 4: Assessment with Mid-Term Examination Score

n=50

Mid-term examination	Score (Range)	Percentage score (Range)	Frequency (f)	Percentage (%)
Excellent	$\geq$65	86-100%	0	0
Very good	56-64	74-85%	2	4
Good	47-55	62-73%	25	50
Average	38-46	50-61%	22	44
Poor	$\leq$ 37	0-49%	1	2
Minimum score	32			
Maximum score	57			
Mean score	46.6+4.5			
Mean Percentage	62.1			

Table no.4,shows that 4% of the students show very good in mid-term examination score, 50% of the students show good in mid-term examination score and 44% of the students shows, average in mid-term examination score and 2% of the students show poor in mid-term examination score respectively. Minimum mid-term examination score of the Basic BSc 2nd year nursing students was 32 and maximum mid-term examination score was 57, mean score of attendance was 46.6+4.5.

SECTION V
Evaluates correlation between attendance and mid-term examination score among the basic bsc 2nd year nursing students.

This section deals with the Evaluates correlation between attendance and mid-term examination score among the Basic BSc 2nd year nursing students by applying Pearson's Correlation Coefficient test.

Table 5: Correlation between attendance and mid-term examination score among the Basic BSc 2nd year nursing students.

n=50

Basic B.scd Nursing Students	Mean	SD	r-value
Attendance	90.62	16.17	
Mid-term Examination Score	46.68	4.51	*0.38*

Table no.5 shows the correlation between attendance and mid –term examination score among the Basic BSc 2nd year nursing students. The 'r' for given data are calculated as 0.38 respectively at 95% level of significance. The normal value of 'r' ranges between $-1 < 0 < 1$. Thus the given data shows positive correlation between attendance and mid –term examination score.

Graph No.2: Correlation between attendance and mid-term examination score among the Basic. B.Sc 2nd year Nursing students.
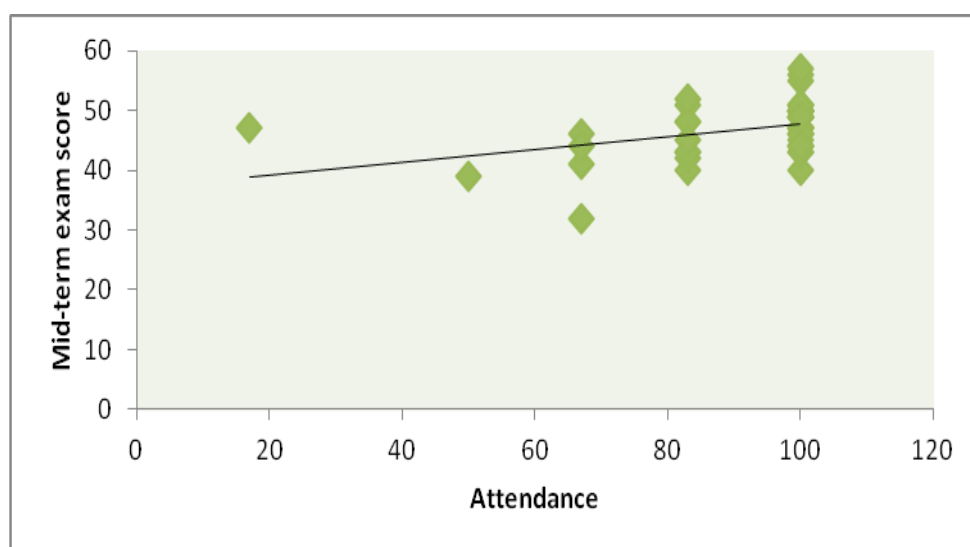
SECTION VI
Evaluates correlation between home assignment score with mid-term examination score among the basic bsc 2nd year nursing students.

This section deals with correlation between home assignment score with mid-term examination score among the Basic BSc 2nd year nursing students by applying Pearson's Correlation Coefficient test.

Table 6: Correlation between home assignment score with mid-term examination score among the Basic BSc 2nd year nursing students

n=50

Basic BSc Nursing Students	Mean	SD	r-value
Home assignment Score	15.23	3.98	
Mid-term Examination Score	46.68	4.51	0.36

Table no.6 shows the correlation between home assignment score with midterm examination score among the Basic BSc 2nd year nursing students. The 'r' for given data calculated as 0.36 respectively at 95% level of significance. The normal value of 'r' ranges between $-1 < 0 < 1$. Thus the given data shows positive correlation between home assignment score with mid-term examination score.

Graph No.3: Correlation between home assignment score with mid-term examination score among the Basic BSc 2nd year nursing students.
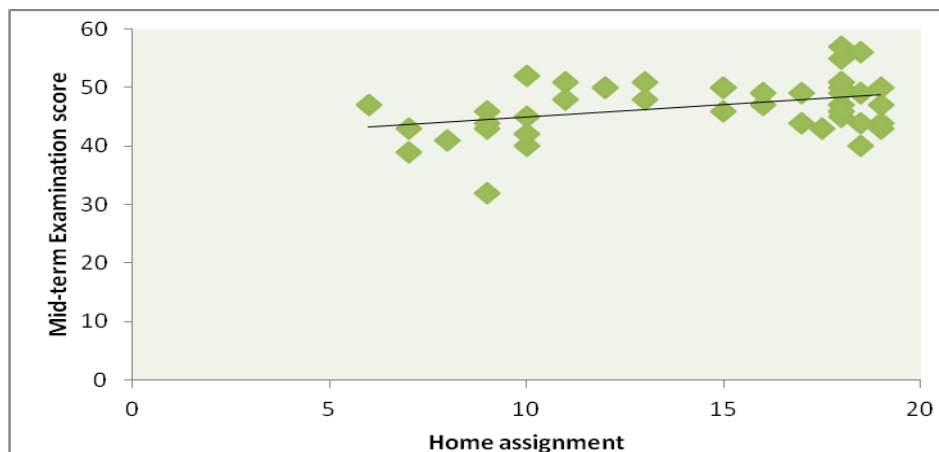
SECTION VII

Evaluates correlation between attendance with home assignment score and mid-term examination score among the basic bsc 2nd year nursing students.

This section deals with correlation between attendance with home assignment score and mid-term examination score among the Basic BSc 2nd year nursing students by applying Pearson's Correlation Coefficient test.

Table 7: Correlation between attendance with home assignment score and mid-term examination score among the Basic BSc 2nd year nursing students

n=50

Table no.7 shows the correlation between attendance with home assignment score and mid-term examination score among the Basic BSc 2nd year nursing students. The 'r' for given data are calculated as 0.63 respectively at 95% level of significance. The normal value of 'r' ranges between -1< 0<1. Thus the given data shows

Basic BSc Nursing Students	Mean	SD	r-value
Attendance	90.62	16.17	
Home assignment and Mid-term Examination Score	61.19	7.10	0.63

positive between attendance with home assignment score and midterm examination.

Graph No.4: Correlation between attendances with home assignment score with mid-term examination score among the Basic. B.Sc 2nd year Nursing students
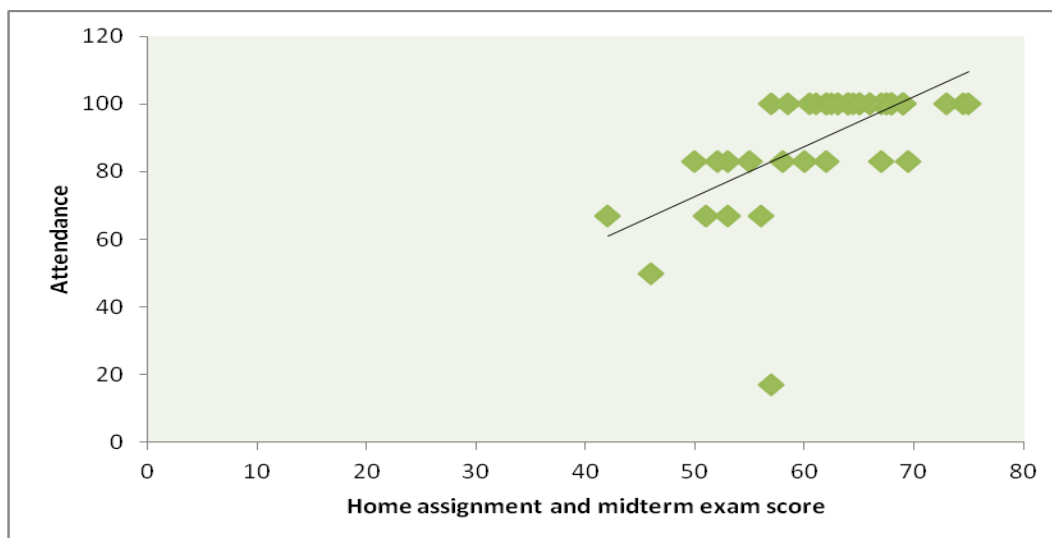
SECTION VIII

Analysis of feedback from basic bsc 2nd year nursing students.

Table no 8: Analysis of feedback of attendance, home assignment and mid-term examination of Basic BSc 2nd year nursing Students.

Item. No	Name of the Item	Strongly agree (5)	Agree (4)	Neutral (3)	Strongly Disagree (2)	Disagree (1)
1	Attendance should be compulsory	15 (30%)	27 (54%)	3 (6%)	2 (4%)	3 (6%)
2	Attendance is helpful to improve the performance	13 (26%)	31 (62%)	3 (6%)	3 (6%)	1 (2%)
3	Home assignment is helpful in final performance	19 (38%)	25 (50%)	2 (4%)	3 (6%)	0
4	It is easy to complete assignment after attending the lecture	9 (18%)	37 (74%)	4 (8%)	0	0
5	Lecture is mandatory to understand the basic concept of the topic taught.	19 (38%)	26 (52%)	5 (10%)	0	0
6	Home assignment included the habit of self learning.	14 (28%)	30 (60%)	4 (8%)	2 (4%)	0
7	Home assignment increased critical thinking.	16 (32%)	27 (54%)	4 (8%)	3 (6%)	0
8	Attendance and home assignment helpful in increasing performance in all examination.(Mid-term,prefinal and University)	13 (26%)	30 (60%)	4 (8%)	2 (4%)	1 (2%)

Table no 8. Item no.1 Show that 30% of the students strongly agree, 54% agree, 6%neutral,4% strongly disagree and 6% of the students are disagree .Item no2 show, 26% of the students strongly agree, 62% agree, 6% neutral, 6% strongly disagree and 2% of the students disagree. Item no.3 show,38% of the students strongly agree, 50% agree, 4% neutral, 6% strongly disagree and 0% of the students are disagree. Item no.4 show, 18% of the students strongly agree, 74% agree, 8%neutral, 0% strongly disagree and only 0% of the students are disagree. Item no.5 Show, 38% of the students strongly agree, 52% agree, 10%neutral. Item no.6, show, 28% of the students strongly agree, 60% agree, 8%neutral,4% strongly disagree. Item no.7 show, 32% of the students strongly agree, 54% agree, 8%neutral, and only 6% of the students are disagree. Item no.8 show, 26% of the students strongly agree, 60% agree, 8%neutral,4% strongly disagree and only 2% of the students are disagree.

Graph No.5: Analysis of feedback of attendance, home assignment and mid-term examination from Basic BSc 2nd year Nursing students.
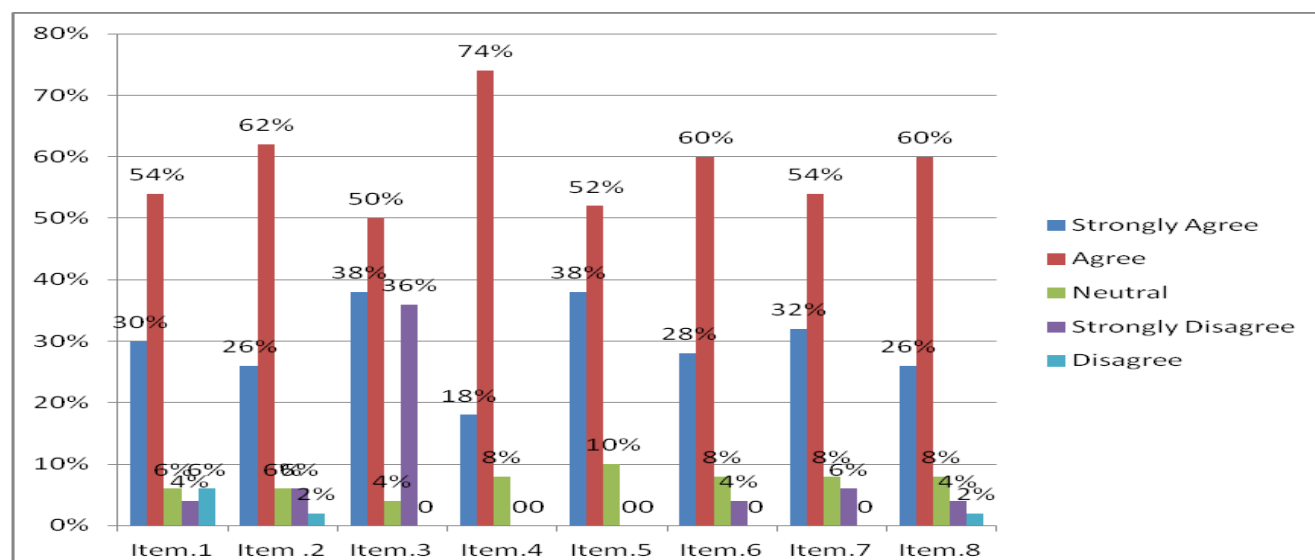
DISCUSSION

The objectives of this study were to evaluate the correlation between class attendance, home assignment and midterm exam score on student's learning.

Literature suggests that attendance and academic performance are directly correlated, with some studies showing a relatively consistent relationship regardless of the students learning . The present study shows that there is positive correlation between attendance, home assignment and mid-term examination score. Class attendance has long been subject of debates while measuring performance in examination. Attendance at class has traditionally been thought to be a prerequisite to good academic performance .It is argued that attendance policy goes beyond just "filling seats", by mandating students-faculty interaction which are critical aspect to facilitate learning.

In the present study, 44 students have excellent attendance (≥80%), 4 students have good attendance (60-69%), 1 student have moderate attendance (50-59%) and 1 student have low attendance(<50). There are only 2 students below 60.

Mean of home assignment for excellent attendance was 16, for good attendance mean of home assignment was 9.7 for moderate student it is 7 but for low attendance (<50) mean score is10.The possible reason for the students with least attendance had the highest mean score is that the students likely had higher educational ability on average and their current performance is a reflection of that.

Mean of mid-term examination score for excellent attendance students was 47.3, good attendance students having mean of midterm examination was 40.75,moderate attendance students having mean of midterm examination was 39 and for low attendance students mean score was 47. The students with least attendance had 47 mean score is which indicate that the student likely had higher educational ability and their current performance is a reflection show on the midterm examination score.

Mean percentage of home assignment score was 15.23±3.9 (80.5%).Assessment with home assignment score show that 58% students are excellent, 6% students are very good, and 30% students are good and 6% student with average score, which is related to low attendance of students.

Mean percentage of midterm examination score was 46.6±4.5 (62.1%).Assessment with midterm examination score show that 2% students are very good,25% students are good, 22 students are average and 1 student was poor. This study supports prior research that students who complete the homework in time and who attend the classes regularly it routinely affect the examination score. Significant correlation of class attendance with academic performance in the examination was reported by Kennth P.Gunn[2](Gunn, 1993),Adel S. Aldosary(Aldosary, 1995)[3],Ledman & Kamunhe[4](Darling-Hammond et al., 2020),Jeffrey Cassell[5](Cassell, n.d.), Enamiroro Patrick Oghuvbu(Oghuvbu, 2010)[6] and Maulik Varu,Anup Vegad,et.al(Varu et al., 2016)[7].

The result of present study form the given data showed positive correlation between attendance and home assignment score the 'r' for given data are calculated as 0.69. The data showed positive correlation between attendance and midterm examination score, the 'r' for given data was calculated as 0.38. The data showed positive correlation between home assignment score with mid-term examination score, the 'r' for given data are calculated as 0.36.The data shows positive correlation between attendance with home assignment score and midterm examination score the 'r' for given data are calculated as 0.63 respectively at 95% level of significance. As the number of days students were present in class, increased their score in home assignment & midterm examination.

Ozkan Erenand Daniel Henderson(Eren and Henderson, 2008)[8] reported that homework is an important determinant of test score. They further stated that homework assignments are most effective for high and low achievers. Trautwein, Kolhr et.al(Trautwein et al., 2002)[9] claims that home work completed and their time spent on homework has much stronger influence on school grades.

Paschal et.al(Paschal et al., 1984)[10] reported the home assignment stimulates the student's achievements by 50%.Yesenia Chavez, [24] have shown that there is a positive correlation between the final grade and the total grade for attendance (p=0.450). Similarly, the Pearson correlation for the final grade and the total homework grade was p=0.757. The results demonstrated that students who successfully completed their homework had a final grade of 70% or more. Adel S. Aldosary(Chávez, 2017)[11] showed a much stronger correlation between the final score and the homework performance in a given course than between the final score and the attendance level. The finding of the present study showed the positive correlation between the attendance, home assignment and mid-term examination score of Basic BSc 2nd year nursing students the 'r' for given data are calculated as 0.63.

RECOMMENDATIONS

On the basis of the findings of the study, it is recommended that the following studies can be conducted.

- One limitations of this study is limited to small sample size for mid-term score only. Single institution experience and compare with mid-term score only for the better outcome attendance will be correlated with all formative examination and it's correlation with University examination with multiple institutes may be helpful.

CONCLUSION

The Present study showed that homework and attendance do matter in the success of examination. The result of the study showed that homework, attendance with mid-term examination score has interrelated with each other, and it shows the positive correlation in the study. However, more research is needed with a larger pool of participants to get more conclusive results. Homework is an extremely useful tool for achieving student learning outcomes. Homework assignment and attendance is accountable factor in academic performance therefore optimum attendance in class and homework completion is to be strictly followed at college level.

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EFFECTIVENESS OF PLANNED TEACHING REGARDING HOME CARE OF POSTOPERATIVE CARDIAC SURGERY AMONG PARENTS OF CHILDREN

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ABSTRACT

Introduction: cardio thoracic surgery is an event that affects the child, parents for child with congenital heart disease, emphasize infection prevention strategies, such as hand washing prior to handling the infant, avoiding ill contacts, and avoiding large crowds. So mother or care giver should support the child and slowly begin to set the limits that were in place before the surgery.

Aims and Objectives: 1.To assess the existing knowledge regarding homecare of postoperative cardiac surgery among parents of children.2.To evaluate the effectiveness of planned teaching on knowledge regarding home care of postoperative cardiac surgery among parents of children.3.To associate the posttest knowledge score with selected demographic variables.

Material and Methods: The study design was one group pretest posttest design and interventional approach. Population was Parents of children with postoperative cardiac surgery in Acharya Vinoba Bhave Rural Hospital (AVBRH) Sample size 60

Result: After the detailed analysis of the conducted study leads to the following conclusion that pretest score 32.90%and after teaching the posttest scores 88.25%

Conclusion: The findings shows significant difference between pretest and posttest that is after the completion of this study it is revealed that interpreted that planned teaching on knowledge regarding home care of postoperative cardiac surgery among parents of children was effective.

Keywords: Domestic worker, educational strategy, checkup, heart surgery, biological parent of kids.

INTRODUCTION:

Lifestyle changes that occur as a result of having cardio-thoracic surgery have a direct impact on the entire household. When the recovering children return home, he/she will have temporary physical limitations and dependencies which the family members compensate. Just as parents and families need to coordinate efforts to assist the child through their restriction process, they should help him to improve his freedom and regain his degree of self-reliance.. For the patient with cardio-thoracic surgery and his/her family, recovery would be a challenge. Days of high energy and exhaustion, successes, moments of temptation, feelings of exuberance and even days of feeling blue or angry will take place, all of which are part of the process of physical and emotional healing that takes place.[1]

NEED FOR THE STUDY

A big problem is pediatric cardiac surgery in developing countries. It is a challenge to use emerging strategies to meet the surgical needs of a very large number of children with congenital heart defects while resolving severe budgetary limitations, seeking funds to support the programme, and ensuring quality in the light of continuous turnover of qualified medical, nursing, and other paramedical staff. In some developing countries, despite improved facilities and surgical skills in recent years, transportation, affordability, late presentation, dietary issues, staffing, and unfavorable economics continue to adversely affect the overall results compared to those of developed nations.[2]

In India mostly affected heart diseases in children is congenital heart diseases. It is a condition in which structural or functional defects of heart are present at birth. A congenital heart defect mainly affects the newborn, infants and young children. Due to India's high birth rate, a congenital heart defect is a growing problem. But only 10% are going for surgical procedure and other intervention.[3]

OBJECTIVES

1. To assess the existing knowledge regarding home care of postoperative cardiac surgery among parents of children.

2. To evaluate the effectiveness of planned teaching on knowledge regarding home care of postoperative cardiac surgery among parents of children.

3. To associate the posttest knowledge score with selected demographic variables.

HYPOTHESIS:

H_1: There will be significant difference in the pre and posttest knowledge score of parents regarding home care of postoperative cardiac surgery.

H_0: There will be no significant difference in the pre and posttest knowledge score of parents regarding home care of postoperative cardiac surgery.

Inclusion criteria

1. Parents who are willing to participate in the study.

2. Parents whose children have undergone cardiac surgery.

3. Parents who are able to read and understand Marathi and English.

Exclusion criteria

1. Parents who are Health professionals.

2. Parents who have attended similar type of research program within 3 months

Materials and Methods

1. Research Approach: Interventional approach

2. Research Design: one group pretest posttest design.

3. Setting of the Study: Archary Vinoba Bhave hospital sawangi (meghe) Wardha

4. Population: Parents

5. Accessible population - : parents of children.

6. Regret population - parents of children of Archary Vinoba Bhave hospital Sawangi (Meghe) Wardha

Variables

7. Demographic variable: Age (in years), Gender**,** Residence**,** Religion**,** Education of parent**s,** Occupation of parents**,** Family income (monthly).

8. Independent variable- planned teaching regarding home care of postoperative cardiac surgery.

9. Dependent Variable: Parents of children.

10. Sample: parents of children.

11. Sample Size: 60

12. Sampling technique: Non probability convenience sampling.

Method of data collection: Data collection instruments consist of the following sections.

Section A: Distribution of parents of children according to their demographic variables. Section B: Assessment of pretest and posttest knowledge regarding home care of postoperative cardiac surgery among parents of children. Section C: Analysis of the effectiveness of planned teaching on knowledge regarding homecare of postoperative cardiac surgery among parents of children. Section D: Associate the posttest knowledge score with selected demographic variables.

Data-collection process

Permission was taken from the concerned authority i.e. Acharya Vinoba Bhavea hospital. The data was gathered during 30 December 2018 to 13 December 2018. Pretest solved by participants planned teaching regarding home care of postoperative cardiac surgery by investigators to the participants on the same day after pre-test any queries raised by the subjects were clarified after planned teaching. On 7th day, post-test knowledge has assessed by investigator to evaluate the by same structured knowledge questionnaire.

REVIEW OF LITERATURE:

A prospective study was conducted among 131 samples of infants who had congenital heart disease. Patients were assessed pre- and postoperatively, and again 12 to 18 months after surgery. Functional difficulties in daily living skills were documented in 40%, whereas >1/2 had poor socialization skills. The study concluded that the high prevalence of functional limitations and dependence in activities of daily living in children and the remedial measures to prevent this is to give proper management and attention by the mother.[4]

A prospective post-discharge survey was conducted 614 procedures performed in 511 patients. The study concluded that major cause of infection and complication are the lack of management and the infection rate decreases with the increase of care.[5]

RESULTS:

SECTION A

This section deals with percentage wise distribution of parents of children according to their demographic variables. A convenient sample of 60 subjects was drawn from the study population, who were from AVBRH of Wardha district. The data was obtained respectively.

Table 1: Distribution of parents of children regards to their demographic variables

n=60

Sr. no.	Demographic variables	Frequency	Percentage (%)
1	Age		
	21-25 years	30	50
	26-30 years	18	30
	Above 30 years	12	20
2	Gender		
	Female	40	66.66
	Male	20	33.33
3	Residence		
	Urban	24	40
	Rural	36	60
4	Religion		
	Hindu	15	23.33
	Christian	03	5
	Muslim	12	16.66
	Others	30	50
5	Education of parents		
	Illiterate	8	13.33
	Primary education	32	53.33
	Secondary education	16	26.66
	Graduate	04	6.66
6	Occupation of Parents		
	Farmer	20	33.33
	Private services	06	10
	Government services	04	6.66
	Labor	30	50
7	Income of family		
	<Rs 5000	10	16.66
	Rs 5001-10000/ month	42	70
	Rs 10001-15000/ month	06	10
	Rs 15001 and above	02	3.33

SECTION B

ASSESSMENT OF LEVEL OF KNOWLEDGE SCORE AMONG PARENTS OF CHILDREN.

Table [2] Assessment of pretest knowledge regarding home care of postoperative cardiac surgery among parents of children.   n=30

Level of knowledge score	Score Range	Percentage score	Pre Test Knowledge Score	
			Frequency	Percentage
Poor	1-5	0-25%	12	40
Average	6-10	26-50%	16	53
Good	11-15	51-75%	2	7
Excellent	16-20	76-100%	0	0
Mean ± SD			7.27 ± 1.56	
Mean Percentage Score			32.90%	
Range			4 – 14	

Table [3]: Distribution of sample with regard to posttest knowledge home care of post-operative cardiac surgery among parents of children.   n=30

Level of knowledge score	Score Range	Percentage score	Post Test Knowledge Score	
			Frequency	Percentage
Poor	1-5	0-25%	0	0
Average	6-10	26-50%	0	0
Good	11-15	51-75%	22	75
Excellent	16-20	76-100%	8	25
Mean ± SD			16.10±1.43	
Mean Percentage Score			88.25%	
Range			11 – 19	

Section C.

Graph1: Significance of difference between knowledge scores in pre and posttest regarding home care of postoperative cardiac surgery among parents of children.
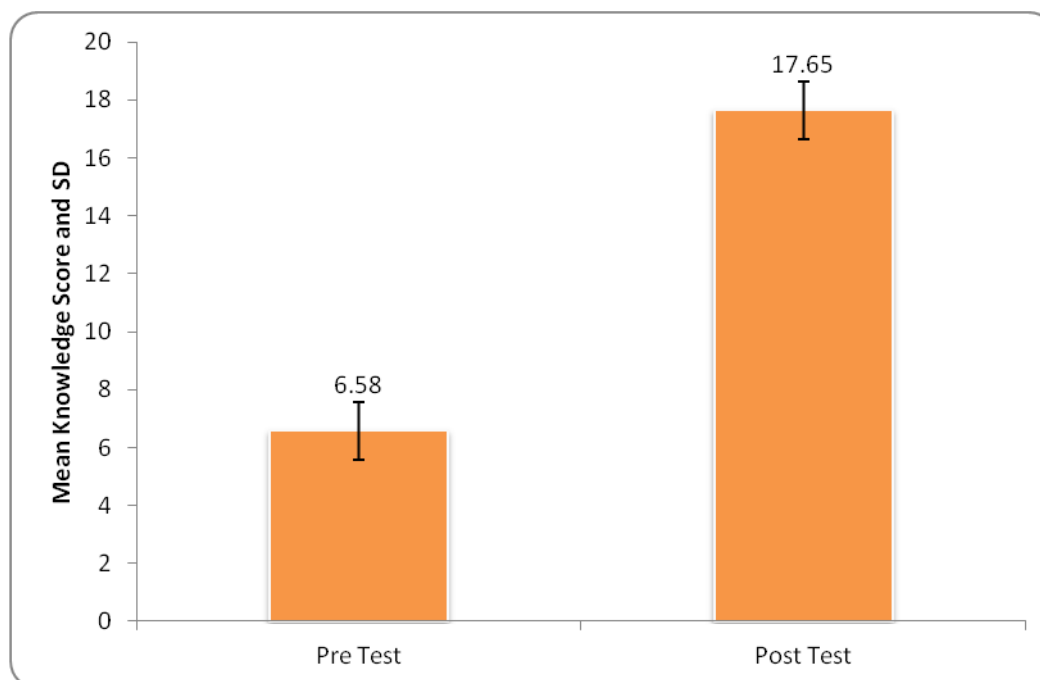
DISCUSSION:

A descriptive study was conducted to discuss about the quality of life after cardiac surgery in 345 children. The study showed 80% have no problem of their quality of life and 20% were having alteration in their quality of life. The study concluded that home care management is essential for proper quality of life of the patient after surgery.[6]

Data collected from Acharya Vinoba Bhave Rural Hospital (AVBRH). The present study was designed to assess effectiveness of planned teaching regarding the home care of postoperative cardiac surgery among parents of children. The statistical Student's paired t test implies that the difference in the pretest and posttest knowledge score found to be 29.56 statistically significant at 0.05% level .H1 is accepted

CONCLUSION:

Hence it is statistically interpreted that planned teaching on knowledge regarding home care of postoperative cardiac surgery among parents of children was effective. There is no association of posttest score with demographic variables.

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ASSESS THE EFFECTIVENESS OF SELF-INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING THE HOME CARE MANAGEMENT OF CHILDREN UNDERGONE CARDIAC SURGERY AMONG THE PARENTS

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ABSTRACT

Background: One of the most common birth defects is congenital heart defect (CHD). accounting for 30% of total congenital malformation. The heart is developed during the period of embryogenesis from the primitive muscle wrapped to a four chambered muscular organ with septa, valves, conduction system and major vessels originating and terminating in the heart. Any defect in the orderly and sequential development leads to structural and functional malformation.[1]Objectives of the study: 1.To assess the knowledge of parents regarding the home care management of children undergone cardiac surgery.2.To assess the effectiveness of instructional module on the knowledge of parents of children undergone cardiac surgery. 3.To associate the knowledge with the selected demographic variables. Materials and Methods: 30 samples were selected from parents of children undergone cardiac surgery in selected hospitals by Purposive sampling technique. Pre Experimental research design one group Pre test and post test without control group design was used. Result: The main findings of study are pretest show that the study participants had inadequate knowledge regarding home care management of children undergone cardiac surgery. After the Self-instructional module, the pre-test and post-test data analysis revealed that the mean post-test score (16.17±1.557) was higher than the mean pre-test score (11.20±2.565). There was statistically significant association between post-test knowledge scores and demographic variables i.e. Education.

Thus demonstrates that schooling may also be one of the driving factors for parents to gain information about t he management of home treatment for children undergoing cardiac surgery. Conclusion- Knowledge of home care management of children undergone cardiac surgery is very important to the parents to prevent complication, all parents should be aware about the home care management of children undergone cardiac surgery. Main aim of the study was to assess the effectiveness of self instructional module on knowledge regarding the home care management of children undergone cardiac surgery.

Keywords: cardiac surgery, home care management, parents.

INTRODUCTION:

A new baby is like beginning of all things- wonder, hope and dreams. The growth and development of human being is a continuous process that begins before birth. Baby's heart begins develop shortly after conception. There are several phases of the fetal heart's development. At first, the heart is just a tube which grows so fast that it needs more space, so it bends and twists back, forming the familiar shape. The next phase begins when the two atria are completely separate and the ventricles are just beginning to separate. Finally, the ventricle separate completely and the heart is developed. The embryonic heart starts to beat at around 21 days after conception and then undergoes various stages of development and modification. During development, structural defects can cause congenital heart disease or heart problems which may present at birth. Congenital heart disease will happen when the heart does not develop normally before birth.[2]

A congenital heart defect is a problem with the structure of the heart which may present at birth. This defect can involve the wall of the heart, the wall of the heart and the arteries and veins near the heart which disrupts the normal flow of blood through the heart. The blood flow can slow down, go in the wrong direction or to the wrong place, be blocked completely.[3]

Congenital heart defects are classified into two broad categories: acyanotic and cyanotic lesions. The most common acyanotic lesions are ventricular septal defect, arterial septal defect; atrioventricular canal, pulmonary stenosis, patent ductus arteriosus, aortic stenosis and coarctation of the aorta and cyanotic lesion are teratology of fallot and transposition of the great arteries.[4]

The centers of disease control reports cyanotic heart defect occurred in 56.9 per 100,000 live birth in the united state in 2005, with higher rates noted when maternal age exceeded 40 years. Their incident in premature infants is 12.5 per 1000 live births.[5]

Most heart defect can be detected while the child is still very young or can be spotted before the baby is even born. All defects cannot be detected before birth through, because the heart continuous to develop in the days after the baby is born some live with a defect for years before it is diagnosed. Although there is a time when children born with congenital heart disease often has little hope for a full life, modern medicine now provides multiple treatment option. It may be treated with certain medication, minimally invasive procedure, and surgeries that offer the promise of a much brighter and healthier future. The advancement have been so successful over the last forty years that there are more adults alive today with treated congenital heart disease than children with congenital heart disease. The treatment depends on the type and severity of the defect and child's age, size and general health.[6]

Many heart abnormalities can be corrected with a single operation in early infancy more complex abnormalities including hypoplastic left heart syndrome and tricuspid atresia required a series of a two or three operations beginning in the newborn period and completely at about three years of age. Less invasive procedure done in the cardiac catheterization laboratory, rather than the operating room, may be used to treat some condition which includes balloon angioplasty or valvuloplasty to relive an obstruction of blood vessels such as coarctation of the aorta or a wall obstruction such as in pulmonary or aortic stenosis. Some abnormalities, such as small- or moderate – sized ventricular septal defect, may close or decrease in relative size as a child grows. While waiting for the hole to close, the child might have to take certain medication, which some kids also need to take after surgeries.[7]

MATERIALS AND METHODS

- **Source of Data:** Data collected from the parents of home care management of children undergone cardiac surgery. AVBRH wardha **Inclusion Criteria:** 1)The parents who were willing to participate in his study.2)Parents who are able to read and write English and Marathi.3)Parents of children who undergone Congenital Heart Disease correction between the age group of 1 year to 15 years. **Exclusion Criteria-1)** The parents who a were not willing to participate in his study. 2)The parents who are not understood the Marathi.**Research Approach:** Quntitative approach **Research Design:** Evaluative research design **Setting:** Research conducted at AVBRH at wardha. **Sampling Technique:** Purposive sampling technique. **Sample size:** The total samples of the study consists of 30 parents **Tools of Research:** Data collection tool is self-administered structured knowledge questionnaire which consists of following aspects. **Part-I:** Deals with demographic variables. **Part-II:** Deals with self-administered structured knowledge questionnaire on knowledge regarding home care management of children undergone cardiac surgery **Independent variable :**knowledge regarding home care management of children undergone cardiac surgery **Dependent variable:** Parents of children of undergone cardiac surgery.

MAJOR FINDING OF THE STUDY AND DISCUSSION

Table 1: Percentage wise distribution of parents of post-operative children with regard to their demographic variables

n=30

Demographic Variables	No. of parents	Percentage
Age(years)		
25-30yrs	17	56.7
31-35 yrs	8	26.7
36-40 yrs	2	6.6
Above 40	3	10.0
Educational Status		
Primary	10	33.4
Higher secondary	15	50.0
Graduate	4	13.3
Post-Graduate	1	3.3
Illiterate	0	00
Type of Family		
Nuclear	11	36.7

Joint	19	63.3
Extended	0	0
Monthly family Income (Rs)		
5000-10000	16	53.3
10000-15000	9	30.1
15000-20000	4	13.3
20000 & above	1	3.3
Occupation Status		
Farmer	13	43.3
Government Employee	1	3.3
Private Employee	11	36.7
Other	5	16.7
Gender		
Male	18	60.0
Female	12	40.0
Consanguineous Marriage		
Yes	7	23.3
No	23	76.7
Congenital Problem		
From birth onward	14	46.7
After 1 week of birth	5	16.7
After 1 month of birth	4	13.3
Others	7	23.3

Table No. 1 shows the frequency and percentage wise distribution of parents of post-operative children with regard to age, education, type of family, income, occupation, gender, consanguineous marriage and congenital problem.

- 56.7% parent of the post operative children were in the age group of 25-30 years, 26.7% in the age group of 31-35 years, and 6.7% in the age group of 36-40 years and remaining 10.0% in the age group of above 40 years respectively.

- 33.3% parent of the post operative children were educated up to primary standard, 50.0% were up to secondary, 13.3 of them were up to graduate and 3.3% were post-graduate respectively

- 36.7% of the parents of post-operative children were belonging to nuclear families and 63.3% were belonging to joint families.

- 53.3% parent of the post operative children were monthly income of 5000-10000 Rs, 30.0% had 10000-15000 Rs, and 13.3% had between 15000-20000 Rs and 3.3% had more than 20000 Rs respectively.

- 43.3% parent of the post operative children were farmers, 3.3% were government employees, 36.7% were private employees and 16.7% were others respectively.

- 60.0% parent of the post operative children were male and 40.0% of them were female respectively.

- parents of post-operative children according to their consanguineous marriage shows that 23.3% of them were yes and 76.7% were no respectively.

.**Table 2:** Assessment of pretest knowledge regarding home care management of selected Congenital Heart Diseases among parents of post-operative children

n=30

Level ofKnowledge score	Score Range	Percentage score	Pre Test	
			Frequency	Percentage
Poor	0-4	0-20%	00	0%
Average	5-8	21-40%	5	16.67%
Good	9-12	41-60%	16	53.33%
Very Good	13-16	61-80%	9	30%

Excellent	17-20	81-100%	00	0%
Minimum score	5			
Maximum Score	15			
Mean Score	11.20±2.565			
Mean percentage	56%			

Table no.2 shows the frequency and percentage wise distribution of parents of post-operative children according to pre-test level of knowledge regarding home care management of Congenital Heart Diseases. The levels of knowledge were seen into 5 categories, poor, average, good, very good and excellent of parents of post-operative children. 16.67% of the parents of post-operative children had average level of knowledge score, 53.33% had good level of knowledge score and 30% had very good level of knowledge.
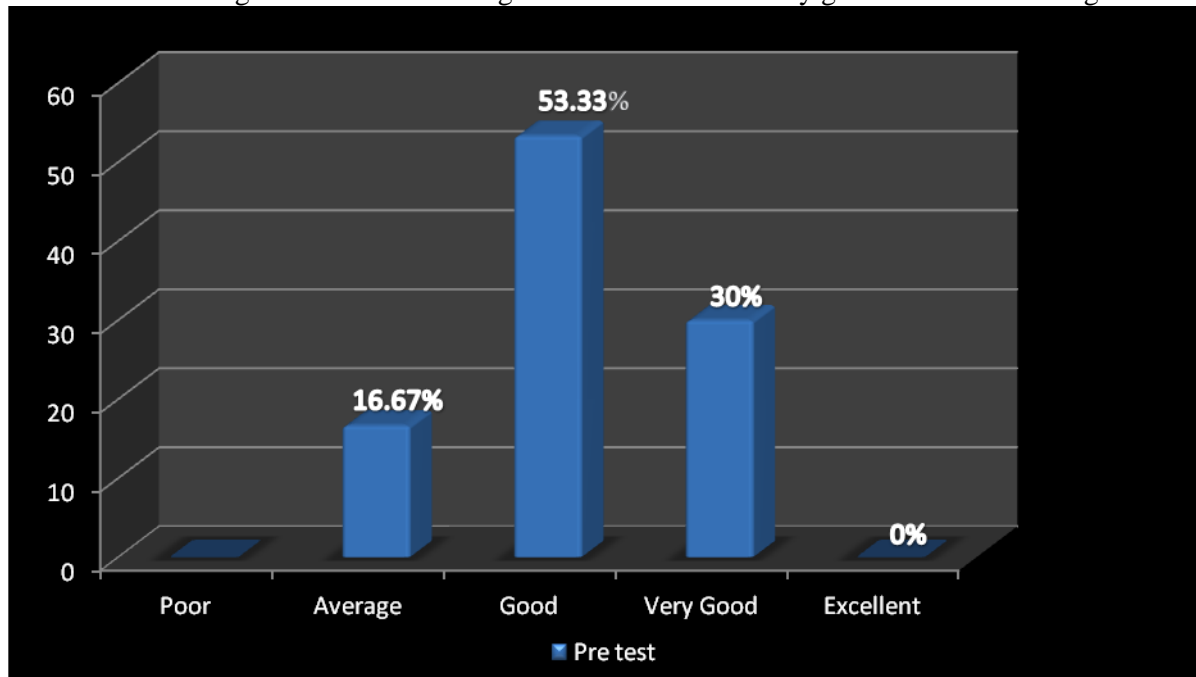
Graph 1.Distribution of pre test knowledge score

Table 3: Assessment of post-test knowledge regarding home care management of children with Congenital Heart Disease among parents of post-operative children.

n=30

Level of Knowledge score	Score Range	Percentage score	Pre Test	
			Frequency	**Percentage**
Poor	0-4	0-20%	00	0%
Average	5-8	21-40%	00	0%
Good	9-12	41-60%	01	3.33%
Very Good	13-16	61-80%	10	33.33%
Excellent	17-20	81-100%	19	63.34%
Minimum score	11			
Maximum Score	20			
Mean Score	16.17±1.557			
Mean percentage	83.5%			

Table no. 3 shows the frequency and percentage wise distribution of parents of post-operative children according to post-test level of knowledge regarding home care management of Congenital Heart Diseases. The level of knowledge were seen into 5 categories poor, average, good, very good and excellent of parents of post-operative children 3.33% of the parents had good, 33.33%% of them had very good level of knowledge score and 63.34% had Excellent score.
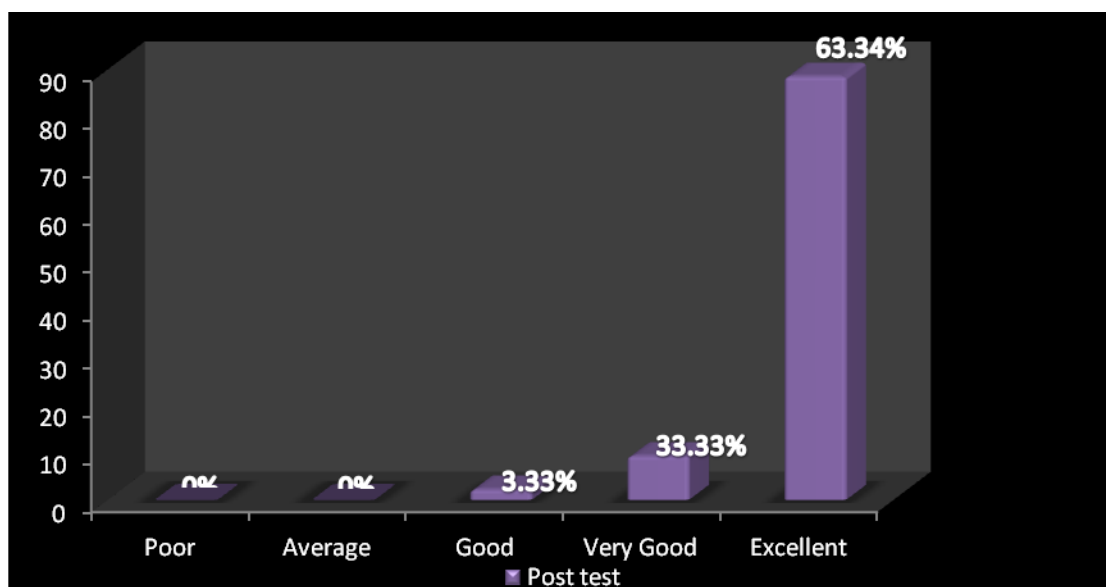
Graph 2.Distribution of post test knowledge score

Table4. Effectiveness of self-instructional module regarding home care management of congenital heart diseases among parents of post-operative children in selected hospitals.

n=30

Overall	Mean	SD	Mean Percentage	t-value	p-value	Significant
Pre test	11.20	2.565	56%	43.77	.002	Sp<0.05
Post test	16.70	1.557	83.5%			S

*S- Significant

Table no.4 shows the significant difference between pre-test and post-test knowledge scores interpretating the effectiveness of self-instructional module on parents of post-operative children on knowledge regarding home care management of post-operative children with a Congenital Heart Diseases. Mean value of pretest is 11.20 and post-test is 16.70 and standard deviation value of pre-test is 2.565 and post-test is 1.557. The calculate t-value is 43.77 and p-value is 0.02. Hence, it is statistically interpretated that the self-instructional module on knowledge regarding home care management of Congenital Heart Diseases among parents of post-operative children was effective. Thus the H_1 is accepted and H_0 is rejected in this study.
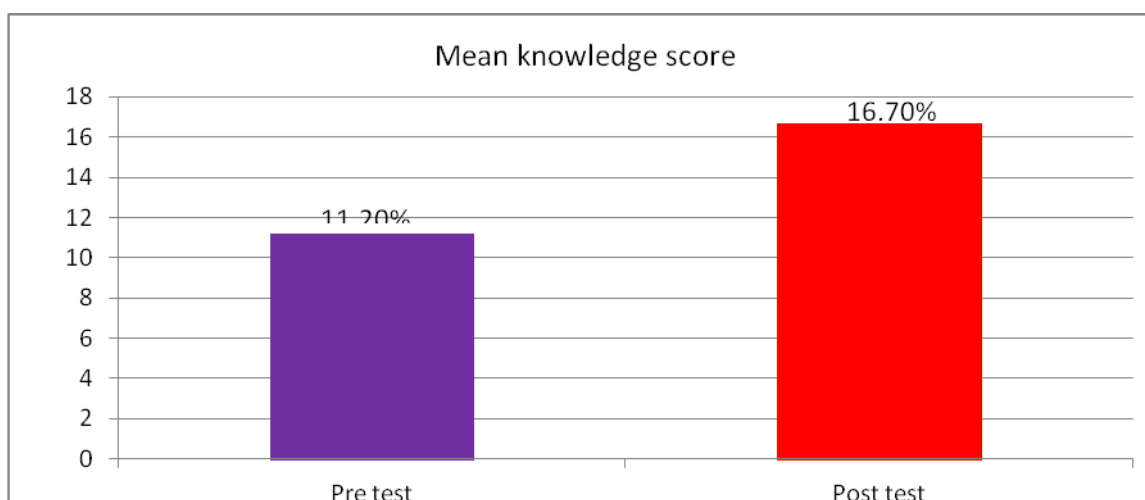
Graph 3. Effectiveness of self-instructional module regarding home care management of Congenital Heart Diseases among parents of poat-operative children in selected hospitals.

Association of knowledge score regarding home care management of Congenital Heart Disease among parents the association of knowledge scores in relation educational status of parents of post-operative children. The 'F' value was calculated 3.498. Also the calculated 'p' value is 0.030 which is less than 0.05. Therefore, it

is interpreted that the educational status of parents of post-operative children is associated with their knowledge score.

DISCUSSION

Present study conducted in rural hospital of wardha and subject was selected through purposive sampling technique. The tool for data collection was structural knowledge questionnaire. The pre test was conducted on the first day followed self instructional module and post test was conducted on seventh day.

A comprehensive review of literature found that most studies indicate that education has a significant effect in increasing the knowledge regarding home care management of post-operative children with congenital heart disease. This research was a small effort to increase the knowledge regarding home care management of mothers of post-operative children with Congenital Heart Disease.

A comparative study was conducted at Hospital for Sick children, Toronto Ontario to determine the information needs of mother infants who had cardiac surgery. The participants ranked their interpretation an comprehension of 33 things in Mother's Information Needs Instrument, and the comfort/ readiness scale was completed immediately before and after discharge.The findings encourage organized training and group follow-up with mothers responsible of caring for children recovering from cardiac surgery at home.[8]

An experimental study was conducted in Taiwan using purposive sampling of 20 mothers in control group and 15 parents in intervention group whose children underwent cardiac surgery. Control group participants received current nursing guidance and were treated in the ambulatory department after the child was discharge from the hospital, while the Systematic Discharge Uncertainty Sub-concepts were completed by the intervention group. Multiple regression analysis showed that patenting stress was not significantly associated with social support and information on the internet.[9]

A exploratory study sought to identify, during the newborn's hospitalization, mother's concerns regarding the care-taking tasks of their infants with congenital heart disease and to determine, 1 month subsequent to discharge, whether the mother's concerns had changed among ten parents of infants aged up to 2 months at the time of the first interview which was conducted in hospital. A second interview was conducted in the home of the subjects 1 month subsequent to discharge. The content of the responses to the interview questions was analyzed and presented under the major headings of selected characteristics of the sample, developmental tasks of parenthood and selected maternal attributes. The largest number of concerns in both interviews related to the tasks of learning how to anticipate and to recognize the needs of the baby. A significant difference was found between the total numbers of concerns reported by each mother in the two interviews.[10]

Conclusion: Knowledge of home care management of children undergone cardiac surgery is very important to the parents to prevent complication, all parents should be aware about the home care management of children undergone cardiac surgery. Main aim of the study was to assess the effectiveness of self instructional module on knowledge regarding the home care management of children undergone cardiac surgery.

RECOMMENDATIONS

- To generalize the results a related study can be repeated on a wide scale.

- A similar study may be carried out using video-assisted teaching.

- A similar study can be conducted on the basis of various institutional settings such as government and priv ate setting to find out the difference in the knowledge level of staff nurses.

- A related research can be carried out to find the nursing students' level of awareness.

- A related research could be carried out in the Neighborhood area

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TO ASSESS THE EFFECTIVENESS OF BREAST MASSAGE ON BREAST MILK EXPRESSION VOLUME AMONG MOTHERS OF PRETERM NEONATES ADMITTED IN NICU

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ABSTRACT:

Early breast milk is liquid gold (colostrum) which is very rich in nutrients and antibodies to protect the baby The ideal food for the young infant is human milk, which has the specific characteristics that match the growing infant's nutritional requirements during first year of life. It has diverse and compelling advantages to infants, mothers, families and society. These include health, nutritional, immunological, developmental, psychological, social, economic and environmental benefits. Objectives:1.To assess the breast milk expression volume of experimental group among mothers of preterm neonates admitted in NICU. 2.To assess the breast milk expression volume of control group among mothers of preterm neonates admitted in NICU Methodology: The research approach is quantitative and used quasi -experimental research design, The eligible mothers of preterm neonates admitted in the postnatal ward. The study had two groups i.e., experimental and control group. Result: the mean difference between experimental and control group was 4.658 and p-value obtained for effect of breast massage on expressed breast milk volume was p = < 0.001 which is significant at less than 0.05 level of significance. There was a significant difference in expressed milk volume between experimental and control group. It can be inferred that breast massage was effective in increasing the expressed breast milk volume among mothers of preterm neonates in the experimental group. Conclusion: The effect of breast massage on breast milk volume on the expression of breast milk among mothers of preterm neonates admitted to NICUs. The breast massage was effective for the increasing the volume of breast milk among mothers of premature neonates, breast massage had no effect on improving the breast milk expression in mothers of premature neonates,

Key words: Breast massage on breast milk expression, mothers of preterm neonates

INTRODUCTION

Early breast milk is liquid gold (colostrum) which is very rich in nutrients and antibodies to protect the baby[1].

The ideal food for the young infant is human milk, which has the specific characteristics that match the growing infant's nutritional requirements during first year of life. It has diverse and compelling advantages to infants, mothers, families and society. These include health, nutritional, immunological, developmental, psychological, social, economic and environmental benefits.[2]

During breastfeeding, approximately 0.25-0.5 grams per day of secretory IgA antibodies pass to the baby via the milk. This is one of the most important features of colostrums, the breast milk created for newborns. The main targets for these antibodies are probably microorganisms in the baby's intestine. There is some uptake of IgA to the rest of the body, but this amount is relatively small. Also, breast milk contains several anti-infective factors such as bile salt stimulated lipase (protecting against amoebic infections) and lactoferrin (which binds to iron and inhibits the growth of intestinal bacteria).[3]

Breastfeeding is a cost effective way of feeding an infant, providing nourishment for a child at a small cost to the mother. Frequent and exclusive breastfeeding usually delays the return of fertility through lactational amenorrhea, though breastfeeding is an imperfect means of birth control. During breastfeeding beneficial hormones are released into the mother's body and the maternal bond can be strengthened. [4]

NEED FOR THE STUDY

Malnutrition kills one out of three infants in India. Children who are not breastfed are almost six times more likely to die by the age of one month than children who receive at least some breastmilk.[3] 66% of these death occur during the first year of life and is often caused by inappropriate feeding practices..[5]

About one-fourth to one half of all infant deaths in developing countries occurs in the first week of life. Immediate breast feeding within the first hour, followed by early exclusive breastfeeding, improves the health & survival status of newborns.[5]Proper breastfeeding exercise could prevent millions of death every year. Promotion of early initiation of breastfeeding has the potential to make a major contribution to the achievement

of the child survival millennium development goal; 16% of neonatal deaths could be saved if all infants were breastfed from day1 and 22% if breastfeeding started within the first hour. Breastfeeding promotion programs should emphasize early initiation as well as exclusive breastfeeding.[6]

OBJECTIVES

1) To assess the effectiveness of breast massage on breast milk expression volume of experimental group and of control group among mothers of preterm neonates admitted in NICU

MATERIAL AND METHOD:

The research approach is quantitative and used quasi -experimental design, The eligible mothers of preterm neonates admitted in the postnatal ward, consent was taken to participate those who are admitted in the NICU. The study had two groups i.e. Experimental and control group. By purposive sampling method, the first fiteen mothers were included in the control group and the next fifteen mothers were included in the experimental group. The control group mothers were taught manual breast milk expression technique, and the experimental group mothers were taught breast massage followed by manual breast milk expression.

RESULT:

Table 1: Percentage wise distribution of mothers of preterm neonates according to their demographic variables

n=30

Demographic Variables	No. of mothers of preterm neonates	Experimental group %	No. of mothers of preterm neonates	Control group %
Age in years				
20-31 yrs	8	53 %	9	60%
32-43 yrs	7	46%	6	40
Type of delivery				
Caesarian section	9	60	8	53
Vaginal delivery	6	40	7	46
Parity				
Primipara	9	60	9	60
Multipara	7	46	6	40

Table 1 show that the majority of mothers in the experimental group, 8 (53%) were in the age group of 20-31 years, 9 (60%) had undergone caesarean section and 9 (60%) were primipara. In the control group, majority of the mothers 9 (60%) were in the age group of 20-31 years, 8 (53%) had undergone caesarean section and 9 (60%) were primipara.

Table- 2 Effectiveness of breast massage on breast milk expression volume of experimental group and of control group

n=30

	Group	Mean	Mean difference	t-value	p-value
Express breast milk volume					
	Experimental	17.228	4.658	2.204	< 0.001
	Control	11.55			

Table 2 shows that the mean difference between experimental and control group was 4.658 and p-value obtained for effect of breast massage on expressed breast milk volume was p = < 0.001 which is significant at less than 0.05 level of significance. There was a significant difference in expressed milk volume between experimental and control group. It can be inferred that breast massage was effective in increasing the expressed breast milk volume among mothers of preterm neonates in the experimental group.

DISCUSSION

In this study the mean difference between experimental group and control group was 0.600 and p-value was 0.407 p-value obtained for effect of breast massage on expressed breast milk volume There was difference in expressed milk volume between experimental and control group. It can be inferred that breast massage was effective in increasing the expressed breast milk volume among mothers of preterm neonates in the experimental group.

An experimental study conducted on the postnatal mothers found that the volume of breast milk expressed was high with breast massage than without massage in sequential pumping (78.71 *vs* 51.32 gm) as well as simultaneous pumping (125.08 *vs* 87.69 gm).6 The above-findings supports the results of the present study.

The was conducted by experimental design,, the findings of that study , The pretest volume of breast milk expressed is 7.33 ± 4.86 and, in post-test, the volume increased to 15.56 ± 8.38. The study results interpret that he breast massage is effective in increasing the volume of breast milk at 0.001 level of significance. An experimental study conducted on 36 postnatal mothers found that the volume of breast milk expressed was high with breast massage than without massage in sequential pumping (78.71 *vs* 51.32 gm) as well as simultaneous pumping (125.08 *vs* 87.69 gm).6 The above-findings supports the results of the present study. The result of the present study shows that post-test pain score (5.01 ± 1.37) is significantly lower than pretest pain score (7.50 ± 1.42) at 0.001 level of significance. A study conducted among 60 postnatal mothers evaluate the effect of breast massage on breast pain and new born sucking. Compared to the control group, women in the intervention group reported significant decreases in breast pain (p < 0.001), increases in number of times newborns suckled after the first and second massage (p < 0.001), and a decrease in breast-milk sodium after the first massage (p = 0.034).7 These studies suggest that breast massage is effective in reducing the pain. As an intervention breast massage requires no additional equipment's or cost. It just requires training the postnatal mothers on breast massage and expression. By reducing the pain and improving the experience of breast milk expression, it improves the mothers comfort and confidence in an extremely stressful situation.

A study was conducted to compare Manual Breast Milk Expression with Breast Pump for Poor Feeders**.** They base their findings on 68 mums whose newborns were latching on to the nipple or sucking poorly 12 to 36 hours after birth. The mums were randomly assigned to either 15 minutes of using a breast pump or 15 minutes of manual breast milk expression in a bid to encourage their babies to breastfeed. Mothers who expressed manually said they were more comfortable being seen to do so than mothers who used a breast pump. And by the age of 2 months, breastfeeding rates were higher among those babies whose mums first expressed their breast milk by hand than those who first used a breast pump. Almost all the mothers (97%) assigned to manual expression were breastfeeding compared with just under 73% of those assigned to the breast pump. Study concluded that hand expression was more appropriate compared to breast pump.[7]

CONCLUSION

The effect of breast massage on breast milk volume on the expression of breast milk among mothers of preterm neonates admitted to NICUs. The breast massage was effective for the increasing the volume of breast milk among mothers of premature neonates, breast massage had no effect on improving the breast milk expression in mothers of premature neonates,

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IMPACT OF GST ON INDIAN ECONOMY

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ABSTRACT:

There are many taxes in present system few levied by central govt. And some levied by state govt. To avoid this multiplicity of taxes Modi govt. has finally introduced a uniform goods and services tax called GST. "A good and simple tax" Modi said that country was towards a modern taxation system ,much simpler and most transparent than the existing one.GST regime that coverts the country into a single market the biggest tax reforms in independent India .GST is consumption based tax collected at each stage of purchase or sale in the manufacturing process. This paper describes the goods and service tax concept, GST levied procedure, GST rates and how GST differs from existing tax system, Sector wise impact of GST & effects of GST on Indian Economy.

Keywords: Goods and Services Tax, Models of GST, Cascading effects of Tax, Impacts & challenges

INTRODUCTION

After 17 arduous years of negotiations by successive govt. and the centre and in the state the Narendra Modi govt. has finally introduced a uniform goods and services tax(GST) regime that coverts the country into a single market the biggest tax reforms in independent India, the goods and services tax finally rolled out at the midnight hours on June 30 2017 with President Pranab Mukherjee and Prime minister Narendra Modi pressing a button to mark the occasion in the historic central hall of parliament calling the GST "A good and simple tax Modi " said that country was towards a modern taxation system ,much simpler and most transparent than the existing one.

Model of GST

In the GST model, it would be dual GST with the centre and states simultaneously levying tax on a common tax base. The GST to be levied by the centre on intra-state supply of goods and service would be called the central GST (CGST) and that to be levied by the states would be called the state GST (SGST). Similarly the integrated GST (IGST) will be levied and administrated by the centre on inter-state supply of goods and services. The centre GST will be framed based on the model GST law.

The GST council approved compensation to states for any revenue loss post-GST rollout, and most of central GST and state GST legislations, but once again skipped the controversial issues on who will audit tax payers under the new tax regime. The control of tax payers among the states and the centre is one of the crucial issues holding up the roll-out of GST.

Classification of GST Rates

GST involves following taxes. It involves Central Excise duty, Service tax, Countervailing Duty, Special countervailing duty, Value Added Tax (VAT) and Central Sales Tax (CST). Others are octroi, entertainment tax, entry tax, purchase tax, luxury tax, advertisement tax and taxes applicable on lotteries. The government is going to remove all the taxes. There will be only GST. As a result, it has no variations across the country.

The government has divided the tax categories into four. These are 5%, 12%, 18%, 28% and some items are nontaxable also.

5% items of daily use but not considered necessities such as sugar, tea, coffee, edible oils and packed food, etc. services like non A.C. economy class rail travel. Advertisement published in newspapers. Transport services, cab aggregators.

12% items that are non essential used by large numbers of households such as mobile phone, butter, ghee, dry fruits etc. services like Non A.C. Restaurants, fertilizer, business air ticket.

18% items used by middle class such as cosmetics, ice creams, vegetable jams, sauces, pasta, cornflakes, cakes, mineral water, notebooks, envelopes, printed circuit, camera- speakers, monitors. Services like AC hotels that serve liquor, IT service, telecom services branded garments, financial services.

28% items luxurious goods, chewing gum, chocolate containg cocoa, wafers, shaving cream, shampoo, vacuum cleaner, heater, weighing machine, paint, deodorant, dye, sunscreen, motor cycle. Services include luxurious hotels, gambling Race, club batting, and cinema.

GST Levied Procedure

GST is consumption based tax levied on each stage of purchase or sale of manufacturing goods and services. Manufacturers have to pay the GST and then claim it through tax credit mechanism but at last it will be bear by consumer. Hence it is also called retail tax.

COMPARISON BETWEEN VALUE ADDED TAX (VAT) SYSTEM AND GOOD AND SERVICES TAX SYSTEM (GST)

Let's take an example to understand this clearly

Before GST Tax sytem	GST System
Product sold from Chennai to Banglore Price=Rs 2000 Vat=10%(Rs.200) Product sold from Ganganagar to Pune: Cost=Rs.2200 Profit=Rs.1000 Sell price=Rs.3200 CST@10%=Rs.320 Total cost of Product=Rs. 3520	Product sold from Chennai to Banglore Price=Rs 2000 CGST@5%=Rs.100 SGST@5%=Rs.100 Product sold from Ganganagar to Pune: Cost=Rs.2200 Profit=Rs.1000 Sell price=Rs.3200 IGST@10%=Rs.320-CGST-SGST 320-100-100=120 Total cost of product is 3320

In the above example you can see that the tax paid on sale within state can be claim against tax paid on sale outside state in GST system, which is not present in before tax system.

SECTOR WISE IMPACT OF GST

Real Estate:

- The real estate sector is one of the important sectors in Indian economy. These sectors play an important role in employment in India. The implementation of GST on real estate will effect partially as the sale or transfer of immovable property is not including in GST.

- Construction – the second largest employer after agriculture, constituting 7.4% of India's GDP in 2013-14.

- But under current indirect tax regime the industry has been embroiled in dispute and various types of taxes are involved from construction to sale to property – for example Service tax, Value Added Tax (VAT), Stamp Duty, Building cess on Construction etc.- Which leads to cascading of taxes and higher cost burden on house purchasers.

- The proposed GST regime law would subsume many indirect tax law and this will benefit the sector like cement & steel further reducing the construction cost.

- It will result in transparency in real estate sector which will reduce tax evasion through more efficient transaction & tracking methods.

Health Care sector:

One of the major concerns of this industry is the current inverted duty structure which affects domestic manufacturing making input cost higher than output cost, therefore discouraging investment.

- GST may either remove inverted duty structure or allow refund of accumulated credit and this will act as a growth catalyst for this sector.

- Since 8 different taxes are levied in pharmaceutical industry, GST would help simplifying it and shed positive impact on industry.

- GST will also result in operational efficiency by streamlining the supply chain which will add 2% to India's pharmaceutical market size. All this will eventually help consumers by making health case & medicines affordable which is already a big goal for government.

Travel, Tourism and Hospitality:

- This industry has multiple taxes levied by both center and state and it is expected that under GST, supplies to hotel and restaurants will be subjected to a single tax.

- R&D cess, payable on franchise fees and technical know-how, is likely to be subsumed under GST thus simplifying compliance procedures and reducing multiple taxes.

- At the moment in India hotels currently levy taxes in range of 20% compared with just 2-5% average range across globe making travelling higher. Therefore on the whole GST will reduce cascading effects & lack of credits therefore, cheaper hotel prices for consumers.

Education Sector:
- Education of country's youth will decide how the economy will flourish, helping in advancement of country.

- In India, Education is provided by both public & private sector and the priority has always been low cost education to one & all and thus this sector enjoys lot of tax exemption which is likely to continue even after GST implementation.

- In case if it doesn't then the sector can avail input credit or CENVAT credit on the duty paid on purchase of inputs & services – thus, overall it is likely to bring the final cost down for industry.

Impact on Public:
- Today are taxed at 12.5% (excise duty) & plus 5-15% (VAT) which are passed to end consumer making it costlier. GST capped at 18%, price of goods can be significantly reduced for consumers.

- Eating out could be cheaper as right now we pay service tax +VAT both. Leading to 18.5% tax whereas GST will cost single tax of 18%.

- Phone bills to get costlier as states are expected to decide service tax. Also service consumed by common man like transportation, railways, banking, air travel etc. may become expensive.

- Buying car and LED's to get cheaper. For example- at present for Rs. 20,000 LED TV we pay 24.5% tax making it 24,900. In GST regime 18% tax making it 23,600.00.

- Online buying of bags, shoes, electronics will be costlier as e-commerce industry comes into a tax net &will have to pay tax deducted at source for every purchase from its sellers.

Agriculture sector:
The agriculture sector is the largest contributing sector the overall India's GDP. It covers around 16% of Indian GDP. GST may provide India with its first national market. (One nation one tax) for the agricultural goods. The GST on agriculture sector will have a positive impact as all the taxes will be subsumed under a single rate of tax.

Banking and Financial service Sector:
Service sector of India consist of 60% GDP. The GST rate for service is18% which is higher than previous rate of tax that is 15%. So there will be increase cost of service like Banking, Telecom, and Insurance etc.The banking and financial services in India are taxed at 14.5% service tax while GST is expected to be 18-20%. Therefore, making these services costlier. Also GST is a destination based tax, it might be challenge to determine the destination of certain services which may lead to difficulty in determining state GST, central GST or interstate GST on B2B and B2C transaction. B2C and B2B are 2 forms of commercial transactions which means Business to consumer and business to business transaction respectively.

Textiles:
The Indian textile Industry contributes 10% of total annual exports. They provide employment to a large no of skilled and non skilled workers in the country. It is expected that the tax rate in GST would be higher of before imposed rate of tax because cotton and wool fiber which are exempted from tax would come under tax in GST. On the other side manufacturing cost may be reduced due to subsume of various taxes like Octroi, entry tax, luxury tax etc. There are few drawbacks also but GST will support the Industry in long run.

Effect of GST on the Indian economy
The implementation of GST has significantly affected the Indian economy in the following ways:

- **Simplification of the tax structure:** GST has simplified the taxation system of the country. As GST is a single tax, calculating taxes at the multiple stages of the supply chain has become easier. Through this, both customers and manufacturers get a clear idea of the amount of tax they are charged and its basis. Further, hassles of handling tax officials and authorities can also be avoided.

- **Fostering production:** As per the Indian retail industry, the total tax component is around 30% of the product cost. Due to the impact of GST, the taxes have gone down. So, the end consumer has to pay lesser taxes. The reduced burden of taxes has enhanced the production and growth of the retail and other industries.

- **SME support:** Small and medium enterprises can now register under the Composition Scheme introduced by GST. Through this scheme, they pay taxes according to their annual turnover. Therefore, businesses having an annual turnover of Rs. 1.5 crores only have to pay 1% GST. Moreover, other enterprises having a turnover of Rs. 50 lakh are required to pay 6% as GST.

- **Enhanced pan India operations:** Companies can now avoid taxation roadblocks, such as toll plazas and check posts. Earlier, these created problems, including damage to unpreserved products while transporting them. So, manufacturers had to keep buffer stock to make up for the damages. These overhead costs of storing and warehousing hampered their profit. A single taxation system has reduced these problems. They can now transport their goods easily across India. This has resulted in the improvement of their pan India operations.

- **Increase in exports:** GST has reduced the customs duty on exporting goods. The cost of production in the local markets has also decreased due to GST. All these factors have increased the rate of exports in the country. Companies have become more competitive when it comes to expanding their businesses globally.

Challenges:

- The principle ideology behind implementation of GST-one country one tax is not suitable for India. Previously there were 32 taxes which include service tax, excise duty, sale tax and 29 state VAT taxes and after implementation of GST it comes to 31 taxes which include IGST, CGST and 29 SGST which again bear complicated tax structure in the country and rebuts the principle of one country one tax.

- Government had incorporated goods and services tax network(GSTN), which is responsible for developing GST portal to ensure services like GST registration, GST return filling, IGST settlement, etc. Which requires robust IT network. It is widely known that India is in an embryonic stage as far as IT network connectivity is concerned.

- Trained and skilled man power with updated GST subject knowledge are not easily available, this had created an additional work load on professionals across industry.

- The Indian insurance market is not so developed as less than 10% of the population has insurance. This was the reason behind the government initiative „PradhanMantriJeevan Bema Yojna" however with the implementation of GST insurance premiums have become expensive by 300 basis points which will become difficult for insurance companies to penetrate the market and would work as an unfavourable factor against insurance awareness schemes.

- The telecommunication sector assumes a serious problem as on the one hand the government is initiating digital India and on the other hand telecom services is getting costlier as telecom services will attract GST tax rate of 18% which is 3% higher than the previous service tax rate, even when India's rural tele density is not even 60%.

- The GST administration intends to keep petroleum products out of the ambit of GST, being petroleum products have been a major contributor of inflation in India.

- Small traders are confused with the GST tax rate application and increasing cost of operations, as they are unable to afford the cost of computer and accounting staff for maintenance of record and filling of returns under GST.

CONCLUSION

Now it conclude that the GST replaces 17 central and state taxes including service tax, value added tax, octroi duties and other changes except customs levy across the country expect in Jammu and Kashmir. The tax will create a common market in the $2-trillion economy with 1.3 billion people it is expected to curb "tax terrorism and inspector raj". GST has positive impact on Indian economy because of simpler and more transparent than the existing one. So the duty of government to conduct training sessions, seminars, workshop, etc. on GST .It surely brings more employment opportunities in near future. It is expected that GST will help more Indian organizations to establish themselves in the international markets.

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ASSESS THE PREVALENCE AND RISK FACTORS OF MIGRAINE AMONG THE SELECTED HIGH SCHOOL STUDENTS

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ABSTRACT

Background: Migraine is one of the most common aetiologies for headache. This very common neurological disorder has a significant impact on patients' quality of life. Communitybased epidemiological studies are scarce in India and other developing countries. As India is multi-ethnic, it is essential to determine the prevalence of headache and its subtypes in other regions also. Information about headache disorders is insufficient and variable, although migraine was identified to be more common in the rural population. Objectives:1. To assess the prevalence of migraine among the students of selected high school. 2. To assess the risk factors of migraine among the students of selected high school. 3. To associate the prevalence and risk factors of migraine among the students of selected high school with a selected demographic variable. Material and Methods: Research Approach- Quantitative Research Approach. Research Design- Descriptive Research Design. Setting of the study- The study was conducted at School of Scholars, Sawangi (M) Wardha; Alphonsa Sr. High School, Sawangi (M) Wardha and Model High School, Salod, Wardha. Population- High School students. Sampling Technique- Non-Probability Sampling Technique. Sample Size- 314. Result- The study shows that the Prevalence of migraine was 10.83%. Mean migraine score was 2.27±1.81which is higher than the level of significance. While dealing with the distribution of subjects with their demographic variables, the prevalence of migraine is statistically associated with the father's educational status (p=0.006), family history of migraine (p=0.001) and gender (p=0.026). Conclusion: In this study the findings of the study shows that there is no significant association of risk factors of migraine with the demographic variables like age, class, family income, type of family, residence and mother's educational qualification; but there is a significant relationship with the gender, father's educational qualification and family history of migraine.

Keywords: Assess, Prevalence, Migraine, High School students

INTRODUCTION

Migraine is one the oldest ailments known to mankind. Some of the earliest cases of painful headaches were recorded by the ancient Egyptians and date back as far as 1200 B.C. Much later, in around 400 B.C., Hippocrates referred to the visual disturbances that can precede a migraine such as flashing lights or blurred vision, which we call aura. He also described the relief felt by sufferers after vomiting.[1]

The word migraine was derived from the Latin word "hemicrania" meaning "half" (hemi) "skull" (crania). This term was first used by Galenus of Pergamon to describe the pain felt across one side of the head during a migraine. He also suggested that the pain originated in the meninges and vasculature of the head. In addition, he pointed towards a connection between the stomach and the brain due to the vomiting that seemed to be related to migraines.[2]

Migraine is a brain disorder most clearly manifested by headache. The two major forms are distinguished based on headache frequency: episodic migraine (EM) and chronic migraine (CM). The revised second International Classification of Headache Disorders (ICHD-IIR) defines CM as having 15 or more headache-days per month for 3 months, with at least eight headaches per month linked to migraine without aura, either by virtue of meeting a case definition or by response to migraine-specific treatment. EM is characterized by headache on <15 days per month with one or more attacks fulfilling ICHD-II criteria. CM affects approximately 1–2% of the worldwide population and has a significantly greater effect on quality of life than EM. CM patients are more debilitated and more likely to miss work or have decreased productivity. CM patients have more comorbid conditions, including psychiatric and pain disorders. They also use more health resources than EM patients, including emergency department (ED) visits, clinic visits and medications.[3]

STATEMENT OF THE PROBLEM

Assess the prevalence and risk factors of migraine among the students of selected high school.

OBJECTIVES OF THE STUDY

1. To assess the prevalence of migraine among the students of selected high school.

2. To assess the risk factors of migraine among the students of selected high school.

3. To associate the prevalence and risk factors of migraine among the students of selected high school with a selected demographic variable.

HYPOTHESIS

1. **H₁:** There is significant association between prevalence and risk factors of migraine among the students of selected high school with their selected demographic variables.

2. **H₀:** There is no significant association between prevalence and risk factors of migraine among the students of selected high school with their selected demographic variables.

MATERIALS AND METHODS

314 samples of high school students were selected by Non-Probability convenience sampling technique in selected high schools of Wardha. The inclusion criteria were: a) High school students who are present at the time of data collection. b) High school students who are willing to participate. The exclusion criteria were: a) High school students who have already attended the programme on the same topic. b) High school students who are not willing to participate at the study. In this study, Descriptive Research Design was used. The tool used were Bilirubinometer and Serum estimation. The data gathering process began from 1st-20th November 2020. The investigator visited selected high schools in advance and obtained the necessary permission from the concerned authorities.

STATISTICAL ANALYSIS

Based on the objectives and the hypothesis the data were analyzed and interpreted by SPSS software.

STUDY APPROVAL

Approvals were obtained from the following: Institutional Ethics Committee, Datta Meghe Institute of Medical Sciences (Deemed to be University) with reference No. DMIMS(DU)/IEC/2018-19/9767, Chief Medical Superintendent, AVBRH, Sawangi(M), Wardha and informed consent has been taken from the patient's parents.

RESULTS

The data obtained to describe the sample characteristics including demographic variables (age, gender, class, residence, family income, type of family, mother's educational qualification, father's educational qualification, family history of migraine, already diagnosed with migraine), prevalence of migraine among the high school students and the associated risk factors of migraine. The study shows that 30.57% of the high school students had mild to moderate intensity of headache, 19.75% had headache duration lasting for about 4-72 hours, 28.03% had frequency 5-9 times of headache per month, 19.11% had unilateral location of pain in head, 31.85% had throbbing quality of pain, 29.62% had report that the headache is aggravated by some factors, 30.25% had photophobia and 20.38% of the high school students had nausea and vomiting. Minimum prevalence score in was 0 and maximum score in was 8. Mean migraine score was 2.27±1.81. Prevalence of migraine was 10.83%. While dealing with section A, distribution of subjects with their demographic variables, the prevalence of migraine is statistically associated with the father's educational status (p=0.006), family history of migraine (p=0.001) and gender (p=0.026). Hence, it is interpreted that if the status of the father's educational qualification is high or in average, it may overall contribute to the low risk of occurrence of migraine among their children. Also, children who are having family history of migraine are likely to develop migraine in their later life. The study also interprets that girl are likely to have migraine as compared to boys in relation to different hormonal factors and environmental factors.

DISCUSSION

Present study reported the prevalence of migraine among 314 high school students in selected schools. In this study, Descriptive Research Design was adopted. International Headache Society classification of migraine criteria was adopted to assess the prevalence of migraine in which students scoring 5 points and above (5≥) are classified under students having migraine, while students scoring below 5 points (5<) are regarded not to have migraine. In this study, the prevalence rate of migraine among the high school students of selected schools is found out to be 10.83%. Present study shows that the prevalence of migraine is statistically associated with the father's educational status (p=0.006); the prevalence of migraine is statistically associated with the family history of migraine (p=0.001); the prevalence of migraine is statistically associated with the gender (p=0.026).

CONCLUSION

In this study the findings of the study shows that there is no significant association of risk factors of migraine with the demographic variables like age, class, family income, type of family, residence and mother's

educational qualification; but there is a significant relationship with the gender, father's educational qualification and family history of migraine.

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Table I: Assessment with level of prevalence of migraine

n=314

Sl.no	Characteristics	Yes	%	No	%
1.	Intensity (Mild to moderate)	96	30.57	218	69.43
2.	Duration (4-72 hours)	62	19.75	252	80.25
3.	Frequency (3-5 times/ month)	88	28.03	226	71.97
4.	Location (unilateral)	60	19.11	254	80.89
5.	Quality (throbbing)	100	31.85	214	68.15
6.	Aggravation	93	29.62	221	70.38
7.	Photophobia	95	30.25	219	69.75
8.	Phonophobia	56	17.83	258	82.17
9.	Vomiting + nausea	64	20.38	250	79.62
	No Migraine <5	280(89.17%)			
	Migraine ≥5	34(10.83%)			
	Mean ± SD	2.27 ± 1.81(0 to 8)			

Graph I: Assessment with level of prevalence of migraine
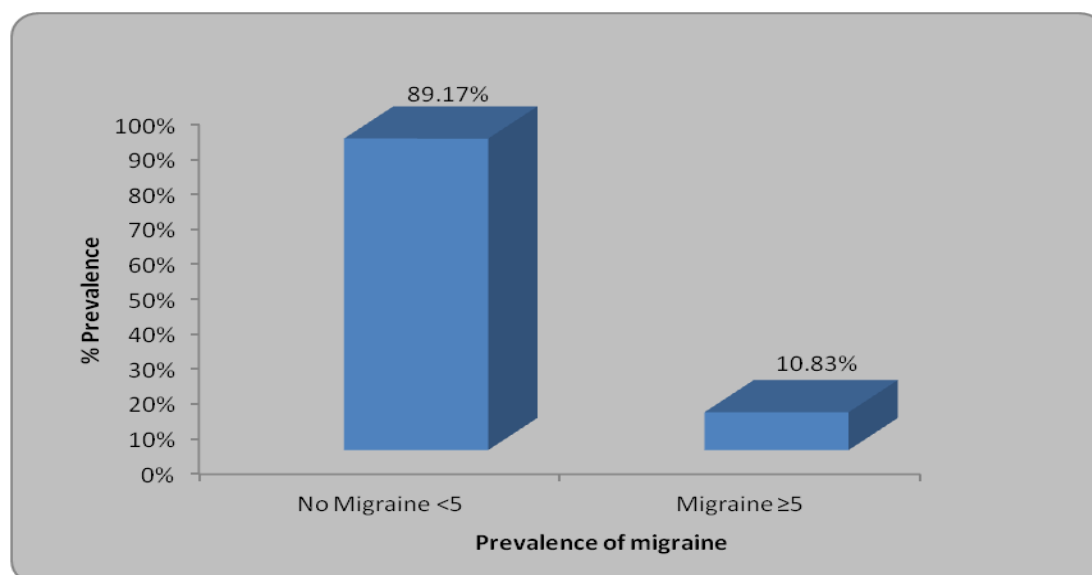
Table II: Assessment of migraine with level of lifestyle characteristics

n=34

Sl. No	Characteristics	Yes	%	No	%
1.	Do you have the habit of sleeping late unnecessarily?	34	100.00	0	0.00
2.	Will your daily water intake be a minimum of 1.5litres?	8	23.53	26	76.47
3.	Do you frequently skip meals?	5	14.71	29	85.29
4.	Do you have the habit of fasting?	19	55.88	15	44.12
5.	Do you have the habit of consuming tea or other caffeinated drink regularly?	16	47.06	18	52.94
6.	Do you smoke?	3	8.82	31	91.18
7.	Do you consume tobacco or other gutkha products?	3	8.82	31	91.18
8.	Do you have the habit of regular watching of Television, Computer, Mobile phone?	26	76.47	8	23.53
9.	Do you spend more than 2 hours continuous watching TV, Computers, Mobile phone etc in a day?	34	100.00	0	0.00
10.	Do you consume alcohol?	0	0.00	34	100.00

Table IV: Assessment of migraine with level of environmental characteristics

n=34

Sl. No	Environmental Characteristics	Yes	%	No	%
1.	Is your living condition prone for too much sun exposure?	15	44.12	19	55.88
2.	Is your living area free from pollution?	17	50.00	17	50.00
3.	Is your home lighting condition sufficient for you to study?	8	23.53	26	76.47
4.	Do you require long distance travel from your home to reach school?	16	47.06	18	52.94

Table V: Assessment of migraine with level of health characteristics

n=34

Sl. No	Health Characteristics	Yes	%	No	%
1.	Stress	18	52.94	16	47.06
2.	Diabetes Mellitus	2	5.88	32	94.12
3.	Hypertension	1	2.94	33	97.06
4.	Cardiac Disease	0	0.00	34	100.00
5.	Visual defect	18	52.94	16	47.06
6.	Seizure	0	0.00	34	100.00

A STUDY ON THE EFFECT OF CORONA VIRUS (COVID – 19) OUTBREAK ON ECONOMIC PARAMETER GOLD PRICE

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ABSTRACT:

The COVID – 19 Pandemic is affecting the economies and human lives worldwide. The necessary protective measures are severely impacting economic activities. As a result of the pandemic, the world economy is projected to contract sharply by -3% in 2020. Policymakers will be forced to implement substantial targeted fiscal, monetary and financial market measures to support businesses and people domestically. Indian economy had achieved growth rate of 4.2% in 2019 but is estimated the growth rate of less than 2% in 2020. Still is better than other advanced and developing countries, where growth rates are estimated negative. There is a wide spread effect of Corona Virus (COVID – 19) outbreak on various economic parameters like exchange rates, gold prices, crude oil prices etc. Gold prices show the amount of economic safety people looking for in such adverse situation. Gold prices reached the maximum in this pandemic due to economic instability.

Key word: COVID – 19, parameters, gold prices, lockdown

1. INTRODUCTION:

Strong economy gives rise to inflation and gold is used as a hedge against inflation. Also, when rates rise, investors flock to fixed-income investments that yield on fixed return unlike gold which does not carry any such return. So, demand takes a back seat with prices remaining flat.

Demand for gold in India is interwoven with culture, tradition, the desire for beauty and the desire for financial protection. India is one of the largest consumers of gold with annual demand equivalent to 25% of worldwide demand. Traditionally gold jewellery is in great demand during festive and wedding seasons, leading to a rally in gold prices. Along with price there are several other factors affecting demand for gold. Consumption demand, protection against volatility, inflation, interest rates, good monsoon, dollar-rupee exchange rates, correlation with other assets classes, geo- political factors etc.

First gold coins were issued widely during the Gupta dynasty around 250 A.D. This period was also known as the Golden Age. India's obsession with gold is well known around the world. Gold ownership in India is neither excessive nor irrational.

Since long the possession and ownership of gold is considered as economic stability of a person. It has been seen that economic crisis always affect the gold prices.

2. REVIEW OF LITERATURE:

(1) Batchelor and Gully (1995) studied on the relationship between jewellery demand in number of countries and price of gold.

(2) Starr and Tran (2008) provide an analysis of the factors which affect the physical demand for gold during 1992 to 2003.

(3) Mozer and Cooks (2013) suggest that the drivers of physical gold demand and gold prices are different on an annual and quarterly perspective from 1992 to 2012.

(4) Pavabutr and Chaihetphon (2008) look at the price discovery process of the Multi Commodity Exchange of India between 2003 and 2007 using daily observations.

(5) Lucey, Larkin and O'Connar (2013) apply Ganzalo and Grager (1995) and Hasbrouck (1995) measures and conclude that although sifnificant time variation exists in information transmission, London may be dominant.

(6) Mullay (2011) and GFMS Gold Survey (2013) find that current prices and future prices both contribute to price discovery dominationg the process at different times with no obvious macroeconomic or political links.

(7) Lucey et. al (2013) examined the contribution that different geographical markets of gold trading make to price formation.

(8) Ivanov (2011) examined the influence of Gold and Silver Exchange Traded Funds on price discovery in the future market.

3. RESEARCH METHOD:

Research Statement:
- To study on fluctuation in gold price in India before lockdown and after lockdown due to COVID-19

Objective of the study:
- To study the fluctuations in gold price in India.
- To study the fluctuations in gold prices during pandemic of COVID – 19.
- To compare the gold prices before and after lockdown during COVID – 19.

Type of Data:
- This study is based on secondary data which are collected from various websites, RBI Report, Journals etc.

Period of Study:
- The present study takes the data from the period of 1/2/2020 to17/5/2020.
- Data is divided into two parts: (a) Period before lockdown i.e. from 1/2/2020 to 21/3/2020 (b) Period after lockdown i.e. from 22/3/2020 to 17/5/2020

Area of study:
- **The study is conducted for India for the time period of COVID-19.**

Tools and techniques of the study:
- Simple statistical techniques are used to analyze data. Tabulation, graphical methods and simple arithmetic means are used in this study.
- T test is conducted for testing of hypothesis is used in this study.

Hypothesis:
Null hypothesis H$_o$: There is no significant difference in prices of gold before and after lockdown due to COVID – 19

(1) Price of 1 gm 24 carat gold before lockdown:

Date	Rate	Date	Rate	Date	Rate
Feb 1	4175	18	4200	6	4404
2	4173	19	4200	7	4423
3	4170	20	4244	8	4424
4	4201	21	4274	9	4436
5	4164	22	4302	10	4374
6	4133	23	4370	11	4340
7	4122	24	4374	12	4228
8	4121	25	4397	13	4029
9	4156	26	4401	14	4046
10	4149	27	4357	15	4046
11	4165	28	4386	16	3963
12	4153	29	4370	17	4033
13	4144	Mar 1	4260	18	3982
14	4146	2	4204	19	3982
15	4176	3	4341	20	4038
16	4176	4	4356	21	4038
17	4219	5	4440		

Table 1 Graphical presentation of gold prices before lockdown:
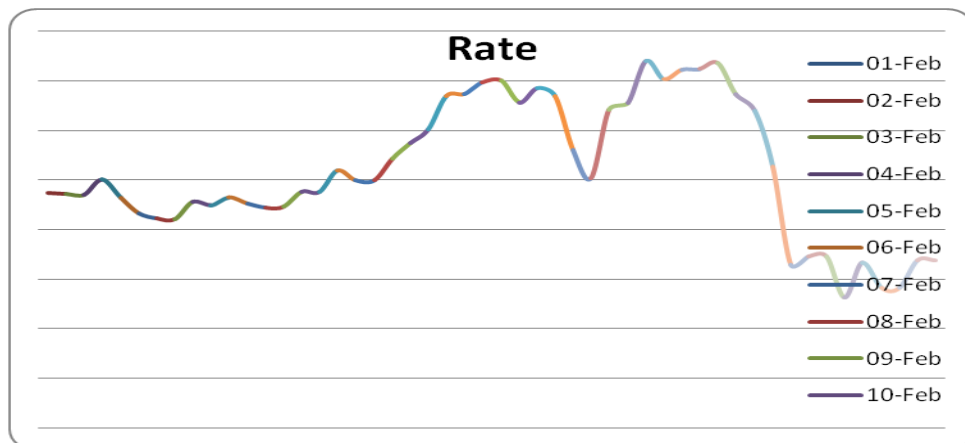
Graph 1

(2) Price of 1 gm 24 carat gold after lockdown

Date	Rate	Date	Rate	Date	Rate
Mar22	4038	10	4531	29	4569
23	4124	11	4530	30	4535
24	4127	12	4530	May 1	4511
25	4215	13	4627	2	4566
26	4360	14	4627	3	4566
27	4353	15	4672	4	4566
28	4356	16	4728	5	4548
29	4356	17	4566	6	4547
30	4380	18	4566	7	4554
31	4325	19	4566	8	4603
April 1	4350	20	4571	9	4585
2	4350	21	4535	10	4585
3	4365	22	4618	11	4574
4	4365	23	4662	12	4578
5	4371	24	4651	13	4595
6	4372	25	4660	14	4663
7	4512	26	4660	15	4715
8	4493	27	4626	16	4736
9	4531	28	4579	17	4736

Table 2 Graphical presentation of gold prices after lockdown:
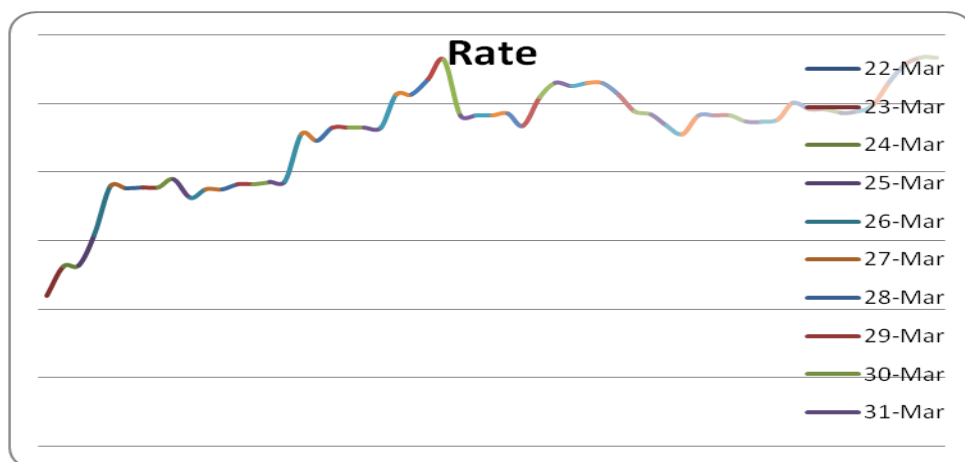
Graph 2

Analysis of exchange rate:

Period	Total	Average	Standard Deviation
Before lockdown (1/2/2020 to 21/3/2020)	210996	4219.92	135.76
After lockdown (22/3/2020 to 17/5/2020)	257189	4512.09	153.27

Table 3

H_o: There is no significant difference between prices of gold before and after lockdown due to COVID – 19

From the table 3, according to student T test, the calculated value of statistics t = 10.46 and table value of t = 1.67 with d.f = 49 at 5% level of significance.

Hence there is significant difference between prices of gold before and after lockdown during COVID – 19.

Hence, the null hypothesis is rejected i.e. lockdown has significant effect on gold prices.

4. CONCLUSION AND SUGGESTIONS:

➢ It has been observed that the economic parameter gold prices were not constant before the outbreak of Pandemic of COVID – 19 but the fluctuations were expected.

➢ We observed very little fluctuations among gold prices before the announcement of lockdown on 22/3/2020.

➢ First lockdown was declared for 21 days up to 14/4/2020 and the economy of the country hit hard.

➢ Entire system of economy was in panic mode. There was no control over the fluctuating gold prices.

➢ Gold price of 1gm 24 carat gold reached the maximum of Rs. 4728 on 16th April after declaration of 2nd lockdown.

➢ Peoples' run for economic safety and stability during economic crisis caused rally in prices of gold.

➢ We can suggest on the basis of the study that it is necessary to control the fluctuation in gold price in order to control exchange rates necessary for foreign trade.

5. LIMITATIONS OF STUDY:

➢ This study is based on the secondary data, which were published in various newspapers, government publications, various websites etc.

➢ This study is mainly focused on Indian Economy.

➢ This study is done for the period of 112 days only.

➢ This study is done from the data of past and the situation which we are facing currently will not persist.

➢ Data are not useful once the situation becomes normal.

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Newspapers:

➢ Economic Times

➢ Times of India

➢ New York Times

Websites:

➢ poundsterlinglive.com

➢ goldpriceindia.com

➢ countryeconomy.com

➢ economictimes.indiatimes.com

A STUDY ON THE GROWTH OF PUBLIC AND PRIVATE SECTOR LIFE INSURANCE COMPANIES IN INDIA

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ABSTRACT:

Insurance is one of the fastest-growing service sectors in the Indian economy with the introduction of a new economic policy of privatization, Liberalization, and globalization. The insurance industry got momentum with the entry of the private sector. The competition has increased in this industry.

An attempt was made to analyze the performance of the private and public sector life insurance companies in the present scenario in India in this paper. The study reveals the growth of the insurance industry and the progress made with the entry of private and foreign companies.

Key Words: Life Insurance, Premium, Growth rate, Private sector, Public Sector

1. INTRODUCTION:

Insurance can be defined as a contract between two parties by which one party (insurer) undertakes to make good or indemnify any financial loss suffered by another party (insured), in consideration of a sum of money called premium, on the happening of a specified event e.g. fire, accident, or death.

The aim of the Insurance companies is to share the risk and provide safety and security from unexpected events like death, old-age benefits, disability, illness, or business risks, i.e. fire, earthquake, theft, accident, etc.

Life Insurance Corporation of India is the only public sector insurance company in India which was established on 1st September 1956. India has a total of 24 insurance companies, in which the Life Insurance Corporation of India is the only life insurance company in the public sector, and the other 23 life insurance companies are in the private sector.

Insurance is one of the most important sectors in the Indian economy. The entry of private players in the Indian Insurance market has changed the nature of competition. But LIC continues to dominate life insurers even in the liberalized scenario of Indian Insurance. Insurance Regulatory and Development Authority [IRDA] has been established to protect the interest of policyholders and regulate, promote and ensure the growth of the insurance industry.

Privatization in the insurance sector was allowed by the government in 1999 and the same year Insurance Regulatory Development Authority (IRDA) was set up. IRDA issued licenses and has opened the life insurance market to private companies. After liberalization in 1999, the Indian life insurance industry expanded tremendously in terms of premium income, new business policies, number of offices, agents, products, etc.

2. REVIEW OF LITERATURE:

Dr. K Ramanathan (2014) evaluated the cost control efficiency of LIC of India from 2002 to 2012 for 10 years. A study shows that first two years, LIC didn't reduce the expenses, but in the last year and subsequent three years from 2007 to 2010, LIC retrenched its expenditure as a measure of contingency. Data Envelope Analysis method was used for the cost efficiency score of LIC of India and analyzed that LIC had scored the highest rank and maintained consistency compared to private insurance companies in all the years of the study.

Prachi Agnihotri (2014) analyzed the impact of privatization on the LIC of India. A study had thrown light on the performance of the LIC of India in a competitive position. This article included the post-privatization period, competitive environment, major attributes for the success of a plan, and performance of LIC. She evaluated the negative and positive aspects of LIC by using a descriptive study. She concluded that the overall performance evaluation of the LIC of India is consistent. In her study, she suggested having more service standards to maintain the market value of the product.

Kunjal Sinha (2013), titled, "Measurement of service quality A Life Insurance Industry Perspective", expressed that insurance companies are working in a highly competitive market where consumers have many companies and products to choose from. His study included primary data which is collected from customers of various insurance companies of five selected cities of Gujarat; He used a factor analysis technique in his research. He highlighted that customers should be given prompt service. A company should give individual attention to the customer.

Yadav and Tiwari (2012) examined the factors which influence customers' policy buying decisions and the preferences of customers regarding life policy investment. They analyzed that LIC is the most accepted and popular brand in life insurance and that the market share of private insurers is gradually increasing due to better service offered by them. They also found that demographic factors play a major role in deciding the purchase of life insurance policies. In their study, they suggested that insurance companies should spread more awareness about life insurance, reduce premium amounts, and focus on need-based innovative products.

Reddy (2015), analyzed the investment pattern of the Life Insurance Industry during the post-reform period. He concluded in his study that the investment of life insurers rose in both absolutely and relatively terms concerning central government securities, investment, infrastructure, and the social sector.

Kalani et al. (2013), in their paper entitled" Comparative study of claim settlement ratio of LIC with other insurance companies in India." A study focused on claims in Life insurance, claims types, and procedure of claim settlement. They surveyed claim settlements of insurance companies in the Jalgaon district. They found that most of the customers are satisfied with LIC services. They concluded that claims were settled as per IRDA guidelines due to which LIC has the highest claim settlement ratio.

3. RESEARCH METHODOLOGY:

- **Research statement:** The insurance sector contributes to the development of the economy through the generation of employment opportunities, acceleration of industrial growth, etc. in India. This study aims at examining the growth of Public and Private Life Insurance companies in India. The research statement of this study is, "A study on the growth of public and private sector Life Insurance Companies in India."

- **Objectives of Study:**

  ➤ To analyze the growth of the public and private Life Insurance industry in India.

  ➤ To discuss the trend of the growth of the public and private Life Insurance Companies during the period of study.

- **Period of Study:**

  ➤ The present study is based on the data from the period of 2010-11 to 2019-20.

- **Area of Study:**

  ➤ A study is conducted for public and private Life Insurance companies in India.

- **Types of Data:**

  ➤ Secondary data is used for this research paper.

- **Collection of Data:**

  ➤ Secondary data was collected from books, reports, journals, newspapers, magazines, and various websites.

- **Tools and Techniques for analysis:**

  ➤ Simple statistical techniques like Tabulation, graphical methods, and means are used in this study.

  ➤ A T-test is used for the analysis of data in this study.

- **Hypothesis:**

  ➤ Null hypothesis H_o: There is no significant difference in the total life insurance premium income between public and private Life Insurance Companies in India.

  ➤ H1: There is a significant difference in the total life insurance premium income between public and private Life Insurance Companies in India.

The following table reveals yearly information of the total Life Insurance Premium income of public and private Life Insurance Companies.
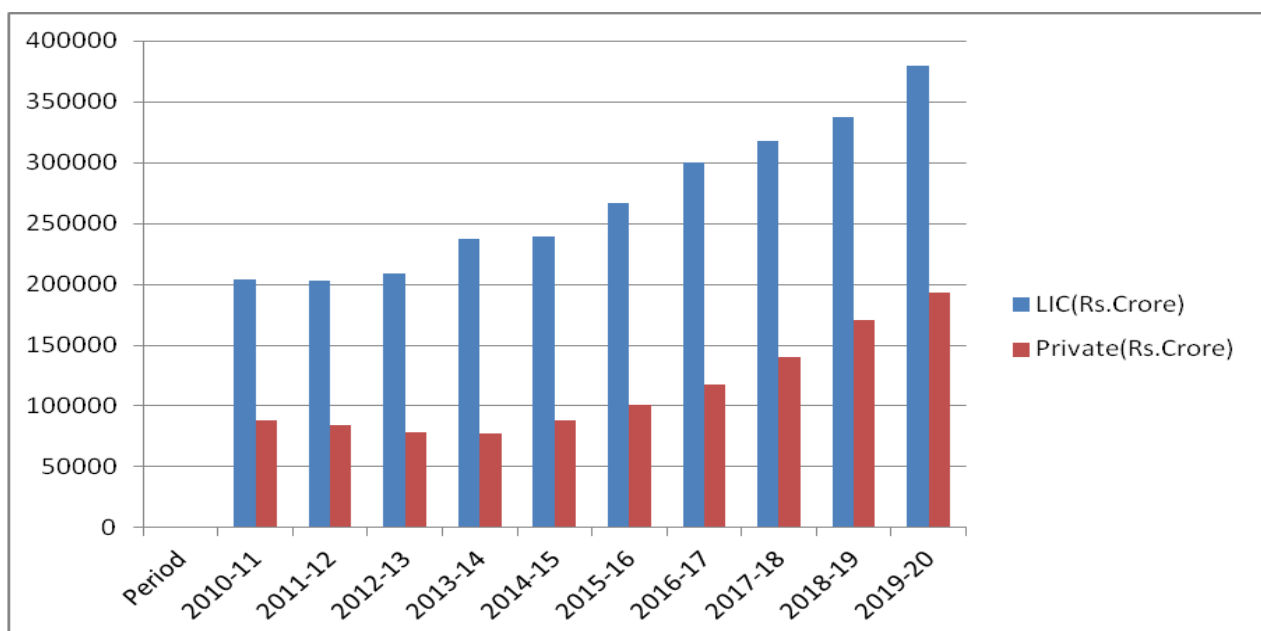
Table 1. Total Life Insurance Premium of LIC and private Insurance companies:

Period	LIC (Rs.Crore)	Growth (%)	Private (Rs.Crore)	Growth (%)
2010-11	203473.40	9.35	88165.24	11.08
2011-12	202889.28	-0.29	84182.83	-4.52
2012-13	208803.58	2.92	78398.91	-6.87
2013-14	236942.30	13.48	77359.36	-1.33
2014-15	239667.65	1.15	88434.36	14.32
2015-16	266444.21	11.17	100499.03	13.64
2016-17	300487.36	12.78	117989.25	17.40
2017-18	318223.21	5.90	140586.23	19.15
2018-19	337505.07	6.06	170626.96	21.37
2019-20	379389.60	12.41	193520.59	13.42

(Sources: Annual report of IRDA) Interpretation of Table 1:

➢ The above table indicates the yearly data of total life insurance premium of public and private Life Insurance companies in India. It also reveals the growth in total premium income of public and private Life Insurance companies, of the last ten years.

➢ The table indicates that the total life insurance premium of the public sector of India was 203473.40 crore Rs. in 2010-11 and it was increased to 379389.60 crore Rs. in 2019-20. There is instability in the growth rate of public sector Life Insurance Company. It was 9.35% in 2010-11 and decrease to -0.29% in 2011-12. Then increase 1.15 to 11.17 from 2014-15 to 2015-16. Then again increase from 6.06% in 2018-19 to 12.41% in 2019-20.

➢ The total life insurance premium of private insurance companies was 88165.24 crore Rs. in 2010-11 and it was increased to 193520.59 crore Rs. in 2019-20. The growth rate of private insurance companies was reduced from year to year. It was decreased from 11.08% in 2010-11 to -4.52% in 2011-12. Then decreased from 14.32 in 2014-15 to 13.64 in 2015-16. And then increased from 19.15 in 2017-18 to 21.37 in 2018-19. Then again decrease from 21.37% in 2018-19 to 13.42% in 2019-20.

➢ The table showed that the growth rate of total life insurance premium of private life insurance companies was high compared to Public Sector Life Insurance Company.
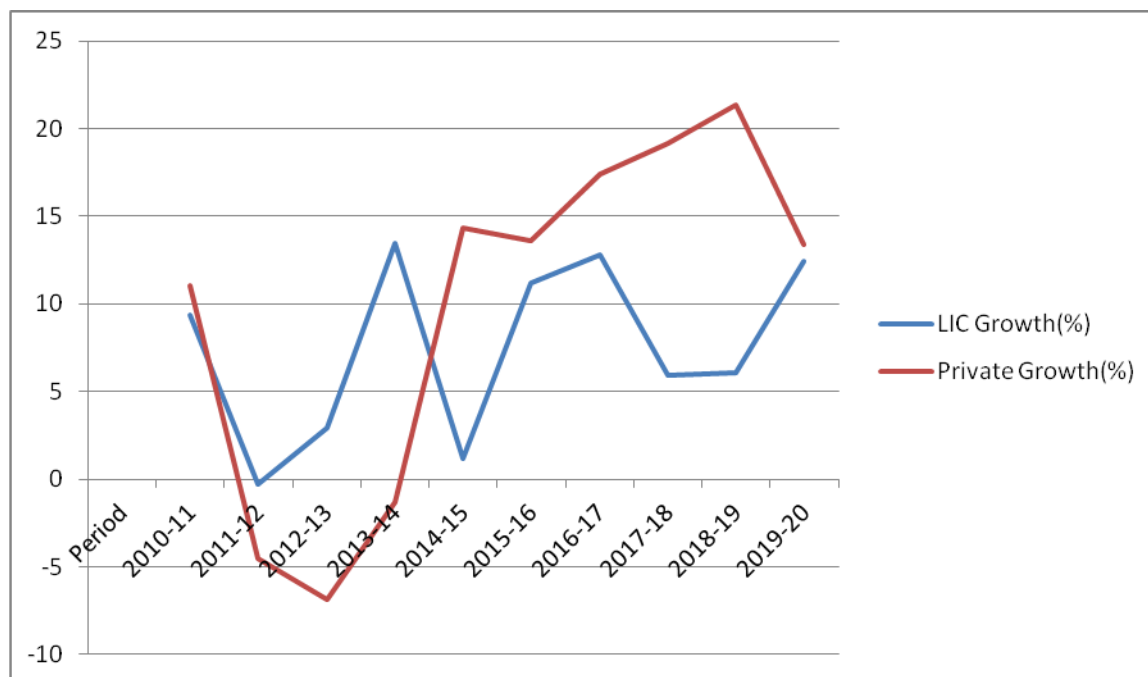
Graphical representation of total life insurance premiums of public and private life insurance companies in India (in crores):

Graph-1

Interpretation of Graph 1:

➢ The above graph indicates the total life insurance premiums of public and private life insurance companies in India.

➢ The graph shows that there is a variation in total premium income in public and private life insurance companies.

Graphical representation of growth rate of insurance companies in terms of total life insurance premium income in India:

Graph-2 Interpretation of Graph 2:

➢ The above graph indicates the growth rate of LIC and the private insurance sector in terms of total life insurance premium income in India.

➢ The graph shows that there is a fluctuation in public and private life insurance companies. However, the growth rate of a public insurance company is high as compared to private life insurance companies.

➢ The graph shows that there is a variation in growth in public and private life insurance companies, but it's shown that after 2014-15, the growth rate is increased in private sector life insurance companies.

H_o: There is no significant difference in the total life insurance premium income between public and private Life Insurance Companies in India.

Table 2. T-test

Particulars	Public sector Insurance Company	Private sector Insurance Companies
Mean(x^2)	269382.57	113976.276
Variance(S^2)	3830478846	1695024849
Observations(n)	10	10
d.f	9	
Level of significance	5%	
T-test calculated(T)	6.611	
T-test table value(t)	2.262	
Result[T>=t]	H_o rejected	

(Source: computed based on table 1) Interpretation of Table 2:

➢ According to the student T-test, the calculated value of statistics t=6.611 and table value of t=2.262 with d.f=9, at a 5% level of significance. So null hypothesis is not accepted.

➢ Hence, there is a significant difference in the growth of total life insurance premium income between public and private life insurance companies.

4. CONCLUSIONS AND SUGGESTIONS:

➢ The present study revealed that Insurance companies must remain competitive by providing better and faster services, and ensuring cost-effectiveness with performance.

➢ This study shows that a large number of initiatives have been taken by the public sector insurance company to compete with private sector insurance companies; still, the LIC needs to reassess its present status after modifying its approach and philosophy in the post-reform period.

➢ Today, insurance companies have to ensure quality products at a competitive price. Their survival depends upon their performance in profitability, productivity, efficiency, and service quality.

➢ Due to privatization, liberalization, and globalization, the competitiveness of insurance companies in India has increased. Companies should give good performance and more service oriented.

➢ With the improvement in products and services, of private insurance companies, LIC has to improve and expand products and services**.**

➢ In this liberalized world, insurance companies should have ensured quality products at a competitive price and expanded consumers' satisfaction by improving performance.

- **Limitations of Study:**

➢ The study depicts the present scenario in the Insurance sector in India and hence result may not apply to another period.

➢ The study is based on secondary data

➢ The study period covers only ten years from 2010-11 to 2019-20.

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➢ www.licindia.in

A STUDY ON THE GROWTH OF PUBLIC AND PRIVATE SECTOR LIFE INSURANCE COMPANIES IN INDIA

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ABSTRACT:

Insurance is one of the fastest-growing service sectors in the Indian economy with the introduction of a new economic policy of privatization, Liberalization, and globalization. The insurance industry got momentum with the entry of the private sector. The competition has increased in this industry.

An attempt was made to analyze the performance of the private and public sector life insurance companies in the present scenario in India in this paper. The study reveals the growth of the insurance industry and the progress made with the entry of private and foreign companies.

Key Words: Life Insurance, Premium, Growth rate, Private sector, Public Sector

5. INTRODUCTION:

Insurance can be defined as a contract between two parties by which one party (insurer) undertakes to make good or indemnify any financial loss suffered by another party (insured), in consideration of a sum of money called premium, on the happening of a specified event e.g. fire, accident, or death.

The aim of the Insurance companies is to share the risk and provide safety and security from unexpected events like death, old-age benefits, disability, illness, or business risks, i.e. fire, earthquake, theft, accident, etc.

Life Insurance Corporation of India is the only public sector insurance company in India which was established on 1st September 1956. India has a total of 24 insurance companies, in which the Life Insurance Corporation of India is the only life insurance company in the public sector, and the other 23 life insurance companies are in the private sector.

Insurance is one of the most important sectors in the Indian economy. The entry of private players in the Indian Insurance market has changed the nature of competition. But LIC continues to dominate life insurers even in the liberalized scenario of Indian Insurance. Insurance Regulatory and Development Authority [IRDA] has been established to protect the interest of policyholders and regulate, promote and ensure the growth of the insurance industry.

Privatization in the insurance sector was allowed by the government in 1999 and the same year Insurance Regulatory Development Authority (IRDA) was set up. IRDA issued licenses and has opened the life insurance market to private companies. After liberalization in 1999, the Indian life insurance industry expanded tremendously in terms of premium income, new business policies, number of offices, agents, products, etc.

6. REVIEW OF LITERATURE:

Dr. K Ramanathan (2014) evaluated the cost control efficiency of LIC of India from 2002 to 2012 for 10 years. A study shows that first two years, LIC didn't reduce the expenses, but in the last year and subsequent three years from 2007 to 2010, LIC retrenched its expenditure as a measure of contingency. Data Envelope Analysis method was used for the cost efficiency score of LIC of India and analyzed that LIC had scored the highest rank and maintained consistency compared to private insurance companies in all the years of the study.

Prachi Agnihotri (2014) analyzed the impact of privatization on the LIC of India. A study had thrown light on the performance of the LIC of India in a competitive position. This article included the post-privatization period, competitive environment, major attributes for the success of a plan, and performance of LIC. She evaluated the negative and positive aspects of LIC by using a descriptive study. She concluded that the overall performance evaluation of the LIC of India is consistent. In her study, she suggested having more service standards to maintain the market value of the product.

Kunjal Sinha (2013), titled, "Measurement of service quality A Life Insurance Industry Perspective", expressed that insurance companies are working in a highly competitive market where consumers have many companies and products to choose from. His study included primary data which is collected from customers of various insurance companies of five selected cities of Gujarat; He used a factor analysis technique in his research. He highlighted that customers should be given prompt service. A company should give individual attention to the customer.

Yadav and Tiwari (2012) examined the factors which influence customers' policy buying decisions and the preferences of customers regarding life policy investment. They analyzed that LIC is the most accepted and popular brand in life insurance and that the market share of private insurers is gradually increasing due to better service offered by them. They also found that demographic factors play a major role in deciding the purchase of life insurance policies. In their study, they suggested that insurance companies should spread more awareness about life insurance, reduce premium amounts, and focus on need-based innovative products.

Reddy (2015), analyzed the investment pattern of the Life Insurance Industry during the post-reform period. He concluded in his study that the investment of life insurers rose in both absolutely and relatively terms concerning central government securities, investment, infrastructure, and the social sector.

Kalani et al. (2013), in their paper entitled" Comparative study of claim settlement ratio of LIC with other insurance companies in India." A study focused on claims in Life insurance, claims types, and procedure of claim settlement. They surveyed claim settlements of insurance companies in the Jalgaon district. They found that most of the customers are satisfied with LIC services. They concluded that claims were settled as per IRDA guidelines due to which LIC has the highest claim settlement ratio.

7. RESEARCH METHODOLOGY:

- **Research statement:**

The insurance sector contributes to the development of the economy through the generation of employment opportunities, acceleration of industrial growth, etc. in India. This study aims at examining the growth of Public and Private Life Insurance companies in India. The research statement of this study is, "A study on the growth of public and private sector Life Insurance Companies in India."

- **Objectives of Study:**
  - ➢ To analyze the growth of the public and private Life Insurance industry in India.
  - ➢ To discuss the trend of the growth of the public and private Life Insurance Companies during the period of study.

- **Period of Study**:
  - ➢ The present study is based on the data from the period of 2010-11 to 2019-20.

- **Area of Study**:
  - ➢ A study is conducted for public and private Life Insurance companies in India.

- **Types of Data**:
  - ➢ Secondary data is used for this research paper.

- **Collection of Data**:
  - ➢ Secondary data was collected from books, reports, journals, newspapers, magazines, and various websites.

- **Tools and Techniques for analysis**:
  - ➢ Simple statistical techniques like Tabulation, graphical methods, and means are used in this study.
  - ➢ A T-test is used for the analysis of data in this study.

- **Hypothesis**:
  - ➢ Null hypothesis H_o: There is no significant difference in the total life insurance premium income between public and private Life Insurance Companies in India.

  - ➢ H1: There is a significant difference in the total life insurance premium income between public and private Life Insurance Companies in India. The following table reveals yearly information of the total Life Insurance Premium income of public and private Life Insurance Companies.

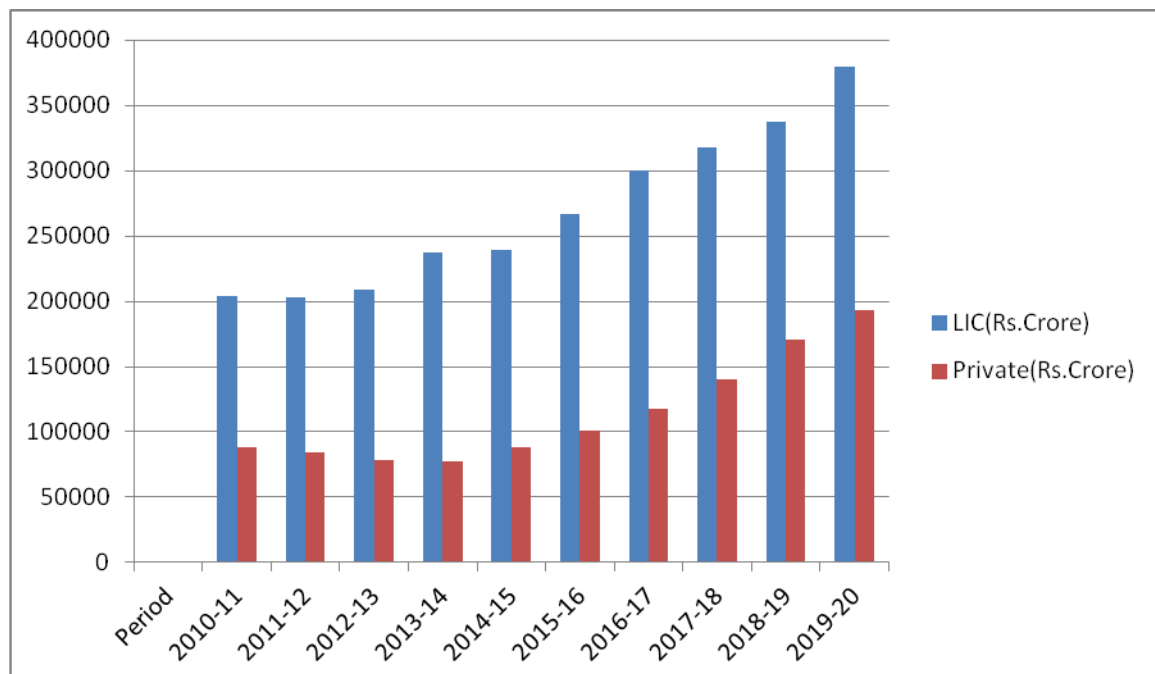**Table 1. Total Life Insurance Premium of LIC and private Insurance companies:**

Period	LIC (Rs.Crore)	Growth (%)	Private (Rs.Crore)	Growth (%)
2010-11	203473.40	9.35	88165.24	11.08
2011-12	202889.28	-0.29	84182.83	-4.52
2012-13	208803.58	2.92	78398.91	-6.87
2013-14	236942.30	13.48	77359.36	-1.33

2014-15	239667.65	1.15	88434.36	14.32
2015-16	266444.21	11.17	100499.03	13.64
2016-17	300487.36	12.78	117989.25	17.40
2017-18	318223.21	5.90	140586.23	19.15
2018-19	337505.07	6.06	170626.96	21.37
2019-20	379389.60	12.41	193520.59	13.42

(Sources: Annual report of IRDA) Interpretation of Table 1:

➢ The above table indicates the yearly data of total life insurance premium of public and private Life Insurance companies in India. It also reveals the growth in total premium income of public and private Life Insurance companies, of the last ten years.

➢ The table indicates that the total life insurance premium of the public sector of India was 203473.40 crore Rs. in 2010-11 and it was increased to 379389.60 crore Rs. in 2019-20. There is instability in the growth rate of public sector Life Insurance Company. It was 9.35% in 2010-11 and decrease to -0.29% in 2011-12. Then increase 1.15 to 11.17 from 2014-15 to 2015-16. Then again increase from 6.06% in 2018-19 to 12.41% in 2019-20.

➢ The total life insurance premium of private insurance companies was 88165.24 crore Rs. in 2010-11 and it was increased to 193520.59 crore Rs. in 2019-20. The growth rate of private insurance companies was reduced from year to year. It was decreased from 11.08% in 2010-11 to -4.52% in 2011-12. Then decreased from 14.32 in 2014-15 to 13.64 in 2015-16. And then increased from 19.15 in 2017-18 to 21.37 in 2018-19. Then again decrease from 21.37% in 2018-19 to 13.42% in 2019-20.

➢ The table showed that the growth rate of total life insurance premium of private life insurance companies was high compared to Public Sector Life Insurance Company.
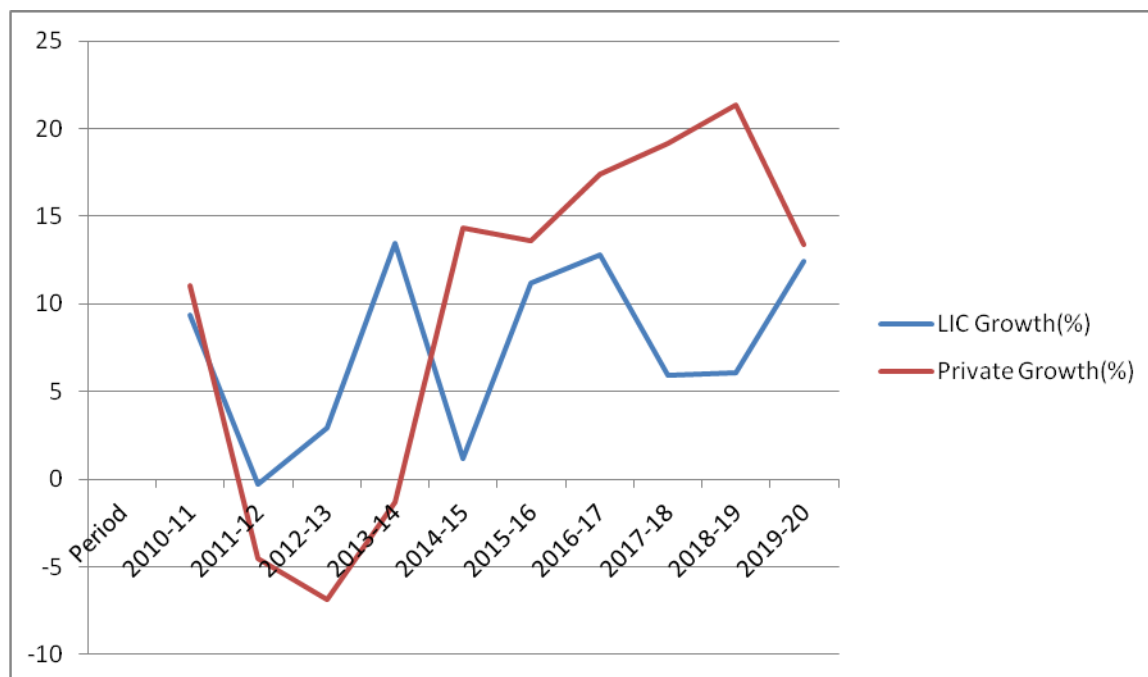
Graphical representation of total life insurance premiums of public and private life insurance companies in India (in crores):

Graph-1 Interpretation of Graph 1:

➢ The above graph indicates the total life insurance premiums of public and private life insurance companies in India.

➢ The graph shows that there is a variation in total premium income in public and private life insurance companies.

Graphical representation of growth rate of insurance companies in terms of total life insurance premium income in India:

Graph-2 Interpretation of Graph 2:

➢ The above graph indicates the growth rate of LIC and the private insurance sector in terms of total life insurance premium income in India.

➢ The graph shows that there is a fluctuation in public and private life insurance companies. However, the growth rate of a public insurance company is high as compared to private life insurance companies.

➢ The graph shows that there is a variation in growth in public and private life insurance companies, but it's shown that after 2014-15, the growth rate is increased in private sector life insurance companies.

H_o: There is no significant difference in the total life insurance premium income between public and private Life Insurance Companies in India.

Table 2. T-test

Particulars	Public sector Insurance Company	Private sector Insurance Companies
Mean(x^2)	269382.57	113976.276
Variance(S^2)	3830478846	1695024849
Observations(n)	10	10
d.f	9	
Level of significance	5%	
T-test calculated(T)	6.611	
T-test table value(t)	2.262	
Result[T>=t]	H_o rejected	

(Source: computed based on table 1) Interpretation of Table 2:

➢ According to the student T-test, the calculated value of statistics t=6.611 and table value of t=2.262 with d.f=9, at a 5% level of significance. So null hypothesis is not accepted.

➢ Hence, there is a significant difference in the growth of total life insurance premium income between public and private life insurance companies.

8. Conclusions and Suggestions:
➢ The present study revealed that Insurance companies must remain competitive by providing better and faster services, and ensuring cost-effectiveness with performance.

➢ This study shows that a large number of initiatives have been taken by the public sector insurance company to compete with private sector insurance companies; still, the LIC needs to reassess its present status after modifying its approach and philosophy in the post-reform period.

- ➢ Today, insurance companies have to ensure quality products at a competitive price. Their survival depends upon their performance in profitability, productivity, efficiency, and service quality.

- ➢ Due to privatization, liberalization, and globalization, the competitiveness of insurance companies in India has increased. Companies should give good performance and more service oriented.

- ➢ With the improvement in products and services, of private insurance companies, LIC has to improve and expand products and services.

- ➢ In this liberalized world, insurance companies should have ensured quality products at a competitive price and expanded consumers' satisfaction by improving performance.

- • **Limitations of Study:**
- ➢ The study depicts the present scenario in the Insurance sector in India and hence result may not apply to another period.

- ➢ The study is based on secondary data

- ➢ The study period covers only ten years from 2010-11 to 2019-20.

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TO ASSESS THE KNOWLEDGE REGARDING POST NATAL DIET AMONG THE WOMEN DURING THEIR PUERPERAL PERIOD

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ABSTRACT

Introduction: The postpartum or puerperium period starts about an hour after delivery of the placenta and lasts for the next six weeks. By 6 weeks from conception, labour and childbirth, the majority of cha nges have been reversed and the body has become unpregnant. Good post-partial care and a wellbalanced diet will affect theirhealth throughout their lives. Healthy foodoptions are promoted in accordance with ethnic and cultural preferences, while women are normally given transparent liquid aft er the cesarean birth before the bowel sounds are apparent and the solid.Objective: To assess the level of awareness among women concerning postnatal diet during their puerperal period. To find the knowledge association with its selected demographic variables. Material and Method: Quantitative approach and Descriptive Research design, non probability convenience sampling, sample size 100. Results: A finding shows that (41%) were having good, (40%) were having very good, (17%) were having average and (2%) were having excellent knowledge score. The minimum score was 05 and maximum score was 14, the mean score for the test was 8.93 ± 2.23 and mean percentage of knowledge was 59.54%. There was no significant association in relation to age, education, occupation, type of family, diet. Conclusion: The women having good knowledge regarding post natal diet.

Keywords: Knowledge, Post natal diet, Post natal women ,Puerperal period.

1.   INTRODUCTION

Find awareness correlation with their chosen demographic variables, labor and childbirth, the majority of changes have been reversed and the body has become un-pregnant. Good post-partial care and a well-balanced diet will affect their health throughout their lives. Protection of ethnic and cultural preferences encourages healthy food choices while women obtain clear liquids typically after cesarean birth, before bowel sounds become heavy, and so on. Women will eat an additional 30 calories per 20 calories of extracted breast milk. It raises the dietary weight of females who monitor their body weight from 500 to 1000 per day calories. Unfortunately, many people use calcium, magnesium, zinc, B6 and folate in less than   the required quantities.New mothers presumably cease to take prenatal vitamins that lead to nutritional deficiencies and a restitution of prenatal supplementation throughout their postpartumera.

A significant calcium supplement is not commonly included in the prenatal supplement, especially   while lactating. 250-350 mg of calcium is passed daily from mum to neonate during breast feeding. Women should be conscious of the need for the key mineral and the need for more

Supplements. Postpartum nutritional therapy can be personalized to particular women based on risk factors for inadequate nutrition such as peaks of maternal age, rapid weight gains during pregnancy, deviation from optimal body weight, multiple gestation and history of eating disorders, near intersectional duration and highly restrictive diet due to traditional and religious practices.[2] But this is also a period in which diet and exercise not only play a very important role in getting you back into shape but also in raising a healthy infant. Eating a healthy diet is the biggest concern, rather than losing weight quickly. Note that it took about nine months for the body to experience such dramatic changes, so give it as much time to get back into shape. While most mothers want to lose their weight during pregnancy, if you breastfeed, excessive diet and rapid weight loss can pose a risk to your baby's and your health. It that take a mother a couple of months to lose the weight she gained during pregnancy.[3]This can be achieved by cutting out high-fat snacks and focusing on a exercising also helps to lose calories and tone limbs and muscles. Moms who breastfeed will collect fluids, along with balanced meals. Many mothers find as they breastfeed the baby they are very thirsty. Water, milk, and fruit juices are all great choices. In fact, if there is anything lacking in mom's current diet, mom's body can tap into her nutritional reserves to conserve the breast milk that is nutritionally-dense. However, for a long time, you will need your body to be safe, to take care of your growing boy, so don't change yourself soon! Be assured that the composition of the nutrients in human milk is sufficient. Mom's protein deficit is all about elevating the milk volume than the baby's milk quality.

Databases searched were PubMed, EBSCO & DELNET. The scholarly articles and reference list of primary articles were prepared. 5studies were undertaken for this narrative review, including 2 qualitative and 3

quantitative studies. All these studies were successful in Results shows that The review highlights the postnatal mothers do not have insufficient knowledge about their postnatal mothers and took the postnatal diet according to their traditional practices. Total 5studies, but two other studies, especially focused on cultural practices her own society and according own family members.[4]

Objective

- To assess the level of awareness among women concerning postnatal diet during their puerperal time.

- To find awareness correlation with their chosen demographic variables.

2. MATERIAL AND METHOD

In present study quantitative approach was used. Non-experimental method of descriptive study was used. Sampling method was a convenient sampling with non-probability. Sample was selected from Wardha district. Hospitalized women during their puerperal period sample size was 100 women from selected hospital during their puerperal period.

2.1 VARIABLES

Research variable

The research variable in this study is knowledge regarding post natal diet.

Demographic variables

In These study demographic variables include age, educational level, occupation, family size and diet.

2.2 Source of data collection

The data were collected through the administration of standardized questionnaires. To complete the standardized questionnaire each sample needed a mean time of 30 minutes. Data collection was carried out within the stipulated period. After the cycle of data collection the investigator thanked all the samples of the analysis as well as the authorities for their cooperation.

3. RESULT

Section A: Consists of sample demographic features such as age, employment, occupation, family size, and diet. (**Table 1**)

Section B : This consists of 15 structured questions about post natal diet. (**Figure1**)

Section C : **Association of knowledge with their selected demographic variables.**

The present study result shown that age-related associated knowledge ranking. The approximate value of < p'=0.667 which was much higher than the usual definition norm, i.e.: /p'=0.05. Therefore, it is considered that women's awareness of postnatal diet during puerperal time is not correlated with age statistically.

The present study result shown that the association of knowledge score in relation to education .The estimated value of < p'=0.265 which was far higher than the appropriate standard of meaning i.e. · p'=0.05. Hence it is interpreted that the knowledge regarding postnatal diet among women during puerperal period is not statistically associated with education.

The present study result shown that association of knowledge score in relation to occupation. The estimated value of < p'=0.243 which was far higher than the appropriate standard of significance, i.e. ~p'=0.05. Hence it is interpreted that the knowledge regarding postnatal diet among women during puerperal period is not statistically associated with occupation

The present study result shown that, the calculated value is = 0.395 which is much higher than the corresponding point of reference, i.e. ~p '=0.395. Therefore the awareness of postnatal diet of women during puerperal periods is viewed as not statistically linked to family groups.

The relationship between information score and diet. The omnipresent = 0,217 which was far higher than the appropriate meaning point, that is to say, omnipresent = 0,05. Therefore, information about postnatal diets of women is not statistically related to diets during puerperal periods.

Statistical methods: By using descriptive and inferential statistics.

4. DISCUSSION

The present study finding were . (41%) were having good, (40%) were having very good, (17Percent) had an average score and (2 percent) had outstanding level of information. The minimum score was 05, the maximum score was 14.for the test was 8.93 ± 2.23 and mean percentage of knowledge was 59.54%.

In relation to age, education, occupation, family type, diet, there was no important correlation between knowledge. The present study finding shows that the postnatal mother had good knowledge without any intervention, supported the following study result.

Study was done related to the knowledge and practice of post natal mother diet were successful in Results shows that The review highlights the postnatal mothers do not have insufficient knowledge about their postnatal mothers and took the postnatal diet according to their traditional practices. Total 5studies, but 2 other studies, especially focused on cultural practices her own society and according own family members Puerperium is the postnatal phase that starts right after a child's birth and lasts approximately 6 weeks. In this time, body tissues, particularly of the genital and pelvic bodies, are returning to women's pregnancy.

Study was conducted in Sai Hospital, suryapet, Telugana, India. The investigator selected 30 postnatal mothers are who were under the age group of 23 to 35years and attending the gynae outpatient department. The analysis finding indicates clearly that 86.67% of mothers had adequate knowledge. A well planned structured teaching programme given to the same group. The effectiveness of programme showed high level of significant at p value.

A non-experimental research design was adopted to conduct the study. A total of 100 samples was selected by using non probability convenient sampling technique. Study instrument was self-structured questionnaire used by the researcher, section 1 consist of demographic variables and section 2 consist of structured knowledge questionnaire. The tool was content validated by expert and translated in to Marathi which was again validate. The value is 0.71 which is reliable. Maximum sample (45%) were in the age group of 16 to 22 years maximum samples (67%) were Hindu, Maximum sample (47%) studied till Graduation,. maximum sample (65%) are having job as a Private sector employee, Maximum samples (74%) are having family income between Rs 10001-30000. maximum samples (53%) belongs to nuclear family. Majority (20%) of the sample had average knowledge. followed by (74%) was in good knowledge score, 10% of the mother had poor knowledge and (6%) of mother had poor knowledge score about postnatal diet.[5]

A qualitative study within The Be Healthy in Pregnancy Study, a randomized controlled trial. Women randomized to the control group were invited to participate. Semi-structured focus groups were conducted at 4–6 months postpartum. Focus groups were audio recorded, transcribed verbatim, coded and analyzed thematically using a constructivist grounded theory approach.Women experienced a complex relationship with their body image, due to unrealistic expectations related to their postpartum body. Participants identified barriers and enablers to healthy habits during pregnancy and postpartum. Gestational weight gain guidelines were regarded as unhelpful and unrealistic. A lack of guidance and information about weight management, healthy eating, and exercise in the postpartum period was highlighted.[6]

A study was conducted in CSI Mission Hospital, Neyyoor. The samples consisted of 50 postnatal mothers based on the inclusion criteria. They were selected by purposive sampling technique. Demographic variables, structured knowledge questionnaire and Likert five point attitude scale were used to assess the baseline data, level of knowledge and attitude on diet during lactation among postnatal mothers. The pre-test knowledge level was 60.24+13.84 and the post-test knowledge level was 80.72+13.9. The mean difference was 20.48 and the 't' value was 7.383.[7]

A qualitative study was done through in-depth semi-directed interviews in an intentional sample with postpartum women with obesity, closed by saturation and qualitative content analysis. Sixteen women were included. Three categories emerged from this analysis: (1) from pregnancy to postpartum: changes in body and eating behavior; (2) eating to fill the void of helplessness felt during the postpartum period; and (3) breastfeeding and baby feeding. Women with obesity eat to relieve unpleasant feelings during the postnatal period. The postpartum period is an opportune moment to introduce long-term changes in the eating behaviors and mental wellbeing of these women. Healthcare teams need to restructure to provide more focused follow-up care for women with obesity during the postnatal period in terms of their physical and emotional health.[8]

4.1 NURSING IMPLICATIONS
4.2 NURSING EDUCATION

Nursing teachers should use the study's findings as an insightful example for nursing students. It helps the nurse educator to plan and implement the topic in nursing curriculum. It also helps the nurse educators to explain how this knowledge regardingpost-natal diet. Educators can help students, colleagues, and junior staff regarding post natal diet among women during puerperal period.

4.3 NURSING ADMINISTRATION
Nurse administrators should take the initiative in organizing continuing education programs for nurses regarding postnatal diet during puerperal period. Appropriate teaching / learning material needs to be prepared and made available for nurses regarding postnatal diet during puerperal period

4.4 NURSING RESEARCH
The study's findings have expanded the current awareness in the nursing field. Suggestions and suggestions for f urther study can be used by other researchers.
The method and methodology used have contributed to the information set and can be used for

additional references.

4.5 RECOMMENDATIONS
A study may be conducted to assess postnatal dietary awareness and attitudes among women during the puerperal cycle.

• A study to evaluate the effectiveness of postnatal diet knowledge among women during the puerperal period may be conducted.

• A comparative study on knowledge of postnatal diet among women during puerperal periods in urban and rural areas may be conducted.

5. CONCLUSION
Postnatal period is a very crucial period of a mother's life because mothers don't care to himself, to her body and mind which is affected during pregnancy or after delivery till the 6 week of period. This research leads to the following conclusion after the thorough review. It reveals non-significant association with respect to their selected demographic variables. Hence, based on the above finding, it was concluded undoubtedly that the written prepared material by the investigator in the form of questionnaire helped the subject to assess their knowledge regarding postnatal diet among women during puerperal period. For further improvement of post natal diet requird diet intervention.

Table 1: knowledge regarding post natal diet among the women during their puerperal period

n= 100

Level of knowledge score	Score Range	Pre test	
		Frequency	Percentage %
Poor	0-3	0	0%
Average	4-6	17	17%
Good	7-9	41	41%
Very good	10-12	40	40%
Excellent	13-15	2	2%
Minimum score		5	
Maximum score		14	
Mean satisfaction score		8.93±2.239	
Mean percentage		59.54%	

The above table shows that 17% sample shows average score, 41% had good level of score, 40% of them had very good level of score and 2% had excellent level of score. Minimum satisfaction score in was 5 and maximum satisfaction score was 14.Mean satisfaction score was8.93±2.239. Mean percentage was 59.54%.
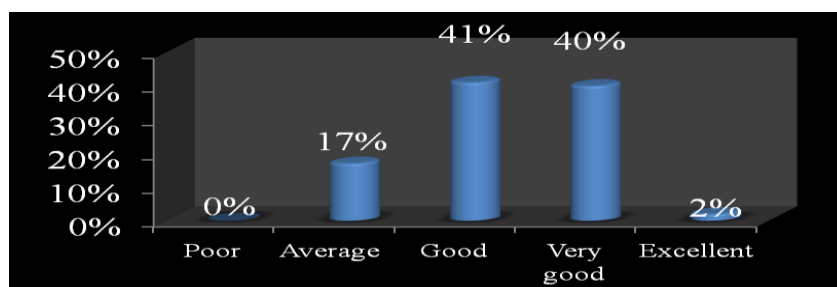
n= 100

Figure 1- Assess the knowledge level regarding postnatal diet among the women during their puerperal period.

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LIFE INSURANCE COMPANIES: CHALLENGES AND OPPORTUNITIES IN RURAL MARKETING PERSPECTIVE

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ABSTRACT

Life insurance is one of India's fastest-growing service industries. Many low-income and rural residents remain uninsured. Life insurance companies have a lot of room to grow their company in rural areas, where people's lives require more protection. IRDA has taken steps to help rural populations, such as Micro Insurance Policies for the economically disadvantaged and rural population.

KEYWORDS: Insurance Industry, Rural Marketing, Challenges, Opportunities.

INTRODUCTION

The Government of India's goal of opening up the insurance market to private firms will be impossible to achieve unless the benefits of liberalization reach rural communities. Since the year 2000, life insurance businesses have mostly focused on urban areas. However, insurance companies have been focusing on rural areas for the past few years. IRDA also encouraging and helping them to do so.

Insurance companies are trying to attract customer with low premiums, innovative products, efficient after sales services, good returns. All the companies are trying not only satisfy but also delight the customer by their quality services after entrance of the private companies in the market.

Both Public and Private Sector are widely expanding the scope of insurance with their unique marketing strategy yet many potential customers in rural India are uninsured. If the Challenges and issues of the rural sector are properly studied and solutions are found, then theinsurance sector still has lots of opportunities.

Around 70% people of India lives in rural area but most of them do not have the access to insurance coverage. Rural people are less aware about risk transfer mechanism. Poor rural people mostly face risk regarding health, retirement age problem, unemployment, accident or death of bread earner, natural disaster etc. These adversely affect their lives. The solution available to them is to sale their land, reduce household consumption, reduce health expenditure, withdrawing children from school. These solutions also adversely affect their lives. Insurance policies can provide safeguard to problems of rural people. Systematic risk mitigation is needed for sustainable development in rural area and that is possible through insurance.

OBJECTIVES

- To study the challenges for Life Insurance companies in Rural Market.

- To suggest promotional strategies to Insurance Companies.

RESEARCH METHODOLOGY

This Study is based on Secondary data collected from various journal, articles andwebsites.

LITERATURE REVIEW

Vandana Gupta & Rahul Yadav (2010), studied about "Opportunities for insurance Sector in Rural India." Researchers conducted survey of 300 people of 5 villages in Rajasthan and concluded that insurance companies should understand need and expectation of villagers for long term success.

Hari Prasad Kalita (2012), in their research paper titled, "Life Insurance Product and services in Rural Areas" explained some myths about rural India and gave recommendation toinsurance companies to reduce cost and provide plans to low income households.

Malick &Krishnan (2014) in their paper titled, "Rural Marketing Strategies, Issues and Challenges" analysed various issues of rural market. Low literacy, communication problem, traditional life, media promotion, seasonal demand, transportation, career challenges, distribution, are major challenges in rural market.

Dr. S. Vishnuvarthani (2016) in his article, "Promotional Strategies for services in rural market" explained service marketing mix. Rural population gets cash flow in season. So, researcher suggests that Insurance companies must analyse the rural market and then according to market characteristics, different marketing strategy should be utilized.

Nitin Goel & Nidhi Gupta (2017), in their research paper titled "A study of customer behavior in rural sector towards Life Insurance" examined satisfaction level of policy holder in Radhthana village in Haryana with private life insurance companies and their employees. Individuals, banks and NBFCs are generating income by selling insurance products. They suggested that word of mouth publicity can be helpful to encourage people to invest in Life Insurance policies.

Dr. B. Ramesh (2019) in their research paper entitled, "Awareness of Micro Insurance in Rural India" evaluated the position of micro insurance in India. micro insurance helps in economic upliftment of poor people. It is clear that micro insurance need push from IRDA and government. Micro finance institutions can help to promote micro insurance.

Farquan Uddain (2019) in their research paper examined the rural marketing strategies of LIC and ICICI prudential in regard to life insurance. The sample of 82 policyholder has taken from Prayagraj. Findings shows that customer orientation of a product, price affordability,

convenient distribution, efficiency of an employee, simplicity of process and attractiveness of physical evidence related to micro insurance are different of both company.

RESERCH GAP

According to the extant literature, there has been little research done on the rural insurance market. Many studies have found that insurance firms have not been successful in the rural market, but there have been fewer studies on why insurance companies have not been successful in rural areas. This research focuses on the study of challenges of untapped rural market and also suggests some promotional strategies to Life Insurance Companies.

IMPORTANCE OF THE STUDY

The Insurance industry is growing because of innovative products and efficient services, distribution channels are also on the rise. Insurers are doing publicity and awareness campaigns in untapped area. Insurers are focusing on semi urban and rural area to spread the message of protection of life through Life Insurance Policy. Insurance Industry has a noteworthy contribution in socio-economic development of India.

CHALLENGES

Insurance companies focus more on big ticket policies to grow their business, while in rural area they do not focus on sale of low ticket policies. Private companies do not have rural centric insurance products. Private companies' presence in micro-insurance is very low.

Most of the branch offices of Life Insurance companies in urban area. Physical presence of them can gain the trust of rural people.

Insurance product is not designed according to the need and income level of rural people.

In India, rural area is very wide having different consumer characteristics. So, provide effective service and building distribution network in vast area is also a challenge.

Education level and awareness level is low in rural area. Trust level for private insurance company is also low. Many rural people are unfamiliar with the concept of insurance and for that awareness programs have to be conducted and that is require huge investment.

Main challenge for insurers to provide insurance plan to low income population by minimizing transaction cost. Insurance companies calculate premium based on aggregates which affect the overall pricing of plan.

OPPORTUNITIES

Many people in India, both in the rural and urban areas, are uninsured. Many insurance companies are attempting to expand their market share in cities. However, in order to boost penetration, businesses must concentrate on several untapped market niches in rural areas. They will be able to raise their overall revenue as a result of this.

Rural population is high and Insurance sector has high potential to cover this area. So, Insurance companies should focus in introducing simple products for farmers, labours etc. who have irregular income. After that they can increase product range as per need of other group also. Insurance companies should try to understand dynamic rural market and make use of it for their benefits.

PROMOTIONAL STRATEGIES

Insurance firms can benefit from the rural market if they plan low-cost advertising, product development, and distribution. Insurers should make every effort to reduce administrative costs and total costs.

For trust building in rural people, personalized service strategy can be devised. Insurance products should be developed according to their need and income. Insurers should offer quality products with efficient services and attractive return to cover many uncovered group of rural area. Micro insurance products should be designed for rural people and underprivileged people.

Brand name may be important in product or services other than insurance. But in the Insurance sector, quality service of a company becomes more important. That's why the insurance advisor/agents should be trained and prepared to provide better services. IRDA should provide the quality training of Insurance advisor and agent through reputed institute.

There are many insurance distribution channels like banks and Financial Institutions. However the insurance industry is dominated by insurance agents that's why the distribution channel can be expanded by appointing a local insurance agents in villages who can communicate effectively in their local languages.

Multiple distribution channels should be developed. Chief Insurance advisors, direct marketing can be used. Many private Insurance companies are making tie-up with banks and using Bancassurance tool. Besides, mobinsurance is also used which offer services through mobile phones. Use of technology can be helpful to serve customer in a better way.

Insurance companies should use telemarketing. They should call the probable customer and explain the benefits of policy. Due to the low rate of education in the villages, telemarketing may be more effective than email marketing and SMS marketing.

Insurance companies should recruit honest and humble agents who provide good after sales services also. Because many agents are interested in selling new policy only. They should care properly for existing policyholder also.

Government should focus on rural area awareness campaign. Government, IRDA and Insurance companies should come up to educate the rural people through hoardings, TV/radio advertisements and through mouth publicity by agent to improve awareness.

Insurers should clearly explain term and conditions to increase satisfaction level among policy holder. They should maintain transparency in payment to Nominee. Claim settlement process should be speedy so that policyholder can cover their financial loss ontime.

A video conference can be set up in which firm executives converse with rural residents and explain the characteristics and benefits of various items.

GOVERNMENT SCHEMES AND INITIATIVE TAKEN BY IRDA

Government of India has introduced many insurance schemes for unprotected rural area. These schemes provide insurance cover with payment of nominal premium.

1) Aam Admi Bima Yojana had introduced by Ministry of Finance. Main Objective of scheme is to provide insurance cover to persons who are living below poverty line or marginally above poverty line in rural & urban areas. Age group between 18 to 59 years can get the benefit of this scheme. This scheme provides benefit of Rs 30,000 on natural death and Rs 75,000 on death/ permanent disability due to accident. The premium of Rs 200 is contributed by the State Govt. and remaining 50% is subsidy by Government of India & maintained by LIC of India.

2) Pradhan Mantri Jan Dhan Yojana launched by government. Bank accounts of individuals were opened and benefit of Rs 30,000 was provided to account holders in case of natural death through LIC. Age group between 18 to 59 years can get the benefit of this scheme and he/ she should have been enrolled under this scheme between 15.08.2014 to 31.01.2015

3) Pradhan Mantri Jeevan Jyoti Bima Yojana also introduced by government to provide insurance cover for death due to any reason for one year which can be renewed from year to year. Age group between 18 to 50 years can get the benefit of this scheme and he/she should have saving account in participating banks. The premium amount of Rs 330 per annum will be deducted from account of the holder through auto debit facility for insurance coverage

4) Rural Postal Life Insurance scheme was introduced by the government on the recommendation of Malhotra Committee .The main aim of this scheme was to extend the insurance coverage to rural and weaker sections through post offices. Apart from this, Government also launched micro insurance like, Jeevan Madhur, Jeevan Mangal and others. IRDA also framed some regulations for insurers. They have to fulfil the indicated targets towards the social and rural sector annually.

CONCLUSION

Despite the fact that insurers are offering more investment and savings options in their various products, the majority of policyholders purchase policies for the protection of their families and for tax purposes. The main reasons for poor penetration in rural India are a lack of information and motivation, as well as late claim settlement. If proper strategy is made then rural insurance market become more profitable but it depends upon cost-effective product development, distribution channels and building confidence level and awareness level among people. The key factor to succeed in rural marketis to understand the market, customer's expectation and need.

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MUTUAL FUND: LINKAGES TO ECONOMIC DEVELOPMENT

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ABSTRACT

India has envisioned transforming the nation into developed nation by 2025 .This needs accelerated economic growth .the economic growth .the economic growth depends on multiple factors. Amongst these varied factors .rate of capital formation is one of the most important determinants of rate of growth of an economy. It is one of the key inputs of development . this paper has the objective to study the role of mutual fund industry in contributing to the nation s economic growth . the paper discusses the concept of mutual funds , how the mutual fund model contributes to economic growth and what is its performance in the context , followed by conclusion .*Research student in V.N.S.G.U SURAT

MUTUAL FUND ; Linkages to economic development

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INTRODUCTION

India has envisioned transforming the nation into developed nation by year 2025.this need accelerated economic growth the economic growth depends on multiple factors. amongst these varied factors. rate of capital formation is one of the most important determinants pf rate of growth of an economy itis one of the key input of development this paper has the objective to study the role of mutual fund industry in contributing to the nation s economic growth. the paper discusses the concept of mutual funds, how the mutual fund model contributes to economic growth and what is its performance in the contributes to economic growth and what is its performance in the context followed by conclusion

MUTUAL FUND CONCEPT

Mutual funds are financial intermediaries in the investment business. They collect funds from. Public and invest on behalf of the investors as "pass through entities '' with losses and gains accruing to the investors only . mutual funds sell their shares to the investors. Invest the proceed in a wide choice of securities in the financial market. Owners of shares receive pro rata share of the earnings from these assets minus management and other assessed by the fund.

Mutual funds are defined by the different authors in different words meaning one and same things. It is a non banking or non depository financial intermediary which acts as an important vehicle for bringing wealth holders and deficit units together indirectly . mutual funds are pooling funds together and then investing that to different securities thus reduce risk by diversification.

The basic is simple .a large number of investors pool money in order to obtain a spread of professionally managed stock exchange investment that they cannot obtain

Individually .the advantage is that the investor in a mutual fund is taking much less of a risk than a direct equity investor , because increase in the number of stocks held obviously reduces the effect that any one stock can have on the overall performance of the equity portfolio. professional management has two main benefit ; it provides specialist investment expertise which should ensure greater success than the inexperienced investor can achieve on his own and it reduces the administrative burden of investment . a mutual fund is divided into equal portfolios called units. The price of unit is calculated regularly by the managers (known Net Assets value =NAV) rather thane being determined by supply and demand in the market .the prices are quoted for units the higher (offer) price beng the price the investor pays to buy units ,and the lower (bid) price being the price he will receive for units sold back to the managers .

The price of the units in any mutual fund is governed by the value of the underlying securities. The price will therefore fluctuate with the movement of the market sector in which fund is invested .the value of an investors holding in a unit therefore .like an investment in shares go down as well as up. In India except unit trust of India all other mutual funds are organized and set up under Indian trust act 1882 . to attract more and more funds innovative to attract more and more funds innovative products are involved by mutual funds.

Mutual funds are a part of financial system and therefore ,the next part discusses the role of financial system in economic growth and how mutual fund model can contribute in.it

FINANCIAL SYSTEM AND ECONOMIC GROWTH

According to the Robinson .the primary function of the financial system is" to provide a link between saving and investment for the creation of new wealth and to permit portfolio adjustment in the composition of the existing wealth"

In other words, the primary function of the financial system is the mobilization of savings, their distribution for industrial investment and stimulating capital formation to accelerate the process of the economic growth.

As mentioned in the beginning the primary objective of its to achieve rapid , balanced and sustained rate of economic growth . the financial system is the instrument for achieving economic development of a country depends on its financial structure .in the long run , the larger proportion of the financial assets to real assets the greater will be the scope for economic growth . investment is a precondition for growth .to sustain growth continuous investment in the growth process is necessary .a more efficient composition of real wealth is obtained by the promotion of financial assets which provide incentive to savers to hold a large part of their wealth in the financial form An increasing rate of saving correlates with the increase in the proportion of saving held in from of financial assets -relative tangible assets .

The financial sector plays major role in the mobilization and allocation of financial saving in the economy and facilitating funds flow among the various sub sectors.

Financial institutions, instruments and financial markets together act to transfer financial resources from net borrowers .the resultant gain to real sector of the economic depend on the efficiency of the financial sector to perform the function of financial intermediation .

The growth of objective of financial system is to achieve the structure and rate of growth of various financial assets and liabilities is consonance with the optimal characteristics of real capital stock.. there is a direct correlation between growth of the economy and growth of financial assets . investment in real sector depend on the functioning of financial sector as the latter collects and channels savings into investment which is necessary for growth. It would be pertinent to note hear that economic growth is a function of level of investment , capital out put ratio in each activity of productive process, the level of investment determines the increase in output of goods and services and income in the economy .

Capital market

The capital market provide an alternative mechanism of reallocating resources ; it channelizes household savings to the corporate sector and allocates funds among firms .in this process. It allows both firms and households to share risk .the capital markets enables the valuation of firms on an almost continuous basis and it plays an important role in the governance of the corporate sector.

What is capital market?

It is an organized market mechanism for effective and efficient transfer of money capital or financial resources from investing class (a body of individual or institutional savers)to the entrepreneur class(individual or engaged in industry , business s ore service)in the private or public sector of the economy .

In a vary broad sense , it includes the ,market for short term funds .H.T.Parikh has referred to it is 'capital market means the market for all the financial instruments , short term and long term as also commercial , industrial and government paper " in words of goldsmith "the capital market of a modern economy has two basic functions: first all allocation of saving among users and investment .second the facilitation of the transfer of existing assets , tangible and intangible among the individual economic unit "

From, the above definitions of capital market it may be deduced that the function of capital market is the collection of savings and their distribution for industrial investment .thus, capital formation is sine qua non of economic development as such the relationship between the market , instrument and services are integrated as well as interdependent .

Capital market is generally understood as the market for long term funds the capital market also facilitates the dispersion of business owner ship and reallocation of financial resources among corporations and industries

Important of capital market

The pace of economic development is conditioned among other thing by the rate of long term investment and capital formation.any capital formation is conditioned by the mobilization . augmentation and channelization of investible funds . the capital market serves a very useful purpose by pooling the capital resources of the country and making them available to the enterprising investors. Well developed capital markets augment resources by

attracting and lending funds on a global scale. The euro currency and euro bond markets are international financial markets in terms of both the supply and demand of fund .

The increase in size of the industrial units and business corporation due to technological development , economic of scale and other factor has created a situation where in the capital at the deposit of one or few individuals is quite inefficient to meet the growing investment demand a developed capital at the disposal of one few individuals is quite inefficient to meet the growing investment demand a developed capital market can solve this problem of paucity of fund .an organized capital market can mobilize and pool together even the small and scattered savings and augment the availability of investible funds. While the rapid growth of joint stock companies has been made possible to a large extent by the growth of capital markets , the growth of join stock companies has been made possible in turn encourage the development of capital market .

A developed markets provides a number of profitable investment opportunities for the small savers .

ROLE OF MUTUAL FUNDS IN CAPITAL MARKET
Mutual funds are an ideal vehicle for investment by retail investors in the stock market for several reasons . first, it pools the investment of small together increasing thereby the participation in the stock market .secondly , mutual funds , being institutional investors can invest in market analysis generally not viable of accessible to individual investors. Providing thereby informed decisions to the small investors. thirdly ,mutual fund can diversify the portfolios in a better way as compared with individual investors due to the expertise and availability of funds.

Mutual funds are very popular all over the world and they can play an important role in many countries . as at end of 2021 there 6.75 crore open ended mutual fund schemes in operation with a total asset base of 25.60 trillion .

Mutual fund industry in india
The history of mutual fund industry in india can be traced back to 1963, with the launce of the unit trust of india by the government of india under an act of parliament . UTI was launched under the regulatory and administrative control of RBI .in 1978 , the regulatory and administrative control of UTI was transferred from the reserve bank of india to IDBI . the first mutual fund scheme that was introduced in india by UTI was in the unit scheme 1964 .UTI had assets under management worth RS 6700 crores, by the end of the year 1988.

In 1987 , public sector enterprises such as state bank of india ,m Punjab national bank , canara bank   etc. and other non -UTI segment such as general insurance corporation of india and life insurance corporation of india entered the market and established public sector mutual funds. The funds introduced by the public sector mutual funds . the funds introduced by the public sector banks, by way of historic progression ,are listed below;

Sbi mutual fund

Can bank mutual fund

Punjab national bank mutual fund

Indian bank mutual fund

Bank of india mutual fund

Bank of baroda mutual fund

From the year 1993 onwards , private sector funds were established in the mutual fund industry . in the same year mutual fund regulations were introduced in india under which all mutual fund regulations were introduced in india under which all mutual fund regulations were introduced in india under which all mutual fund except UTI has to be registered . the first privet sector mutual fund that was registered . the kothari pioneer fund , which was merged with franklin tample ton later on .in 1996 the mutual fund regulation were revised and this substitutede the earlier version .

In 2003 , the unit trust of India act 1963 was repealed and was divided into 2 separate entity _ the UTI mutual fund , which is sponsored by punjab national bank , State Bank of India and bank of baroda and second entity is the specified undertaking of the Unit trust of India . The bifurcation

The mutual fund industry in India has outsourced the work 9f servicing investors, to register and transfer agents (RTA) these RTA are Karvy and CAMS , with covering almost 65% of asset servicing . the only exception is franklin Templeton mutual fund services , which has its Owen RTA set up on an in house basis. These RTAs

have investor services centers which offer a wide range of services such as KYC fulfillment for formalities , financial transactions acceptance and processing , nomination registration , non Financial change ,

The Aim in India mutual fund industry stands at 24.55 Trillian INR as of May 31st 2020 , the AuM in India has grown four fold in a decade (2010-2020) and aims at four fold growth by 2025 . Equity AuMs continued to be the major contributor with 42.1% share while debt oriented schemes accounted for 28.8% of AuMs and liquid/money market accounted for 23.3% in September 2019 .

Digital penetrations , government targeting smart cities and increased data speeds are also facilitating the darft of asset share to wards smaller cities and towns . Increased retail contribution through sips shows the power of digital penetrations in India .

The total number of folios as on May 31 ,2020 stood at 91 million, and maximum investment is from retail segment stood at INR 80.3 million . Mutual funds says that it's a pool of collective investment by the different investors and institutions. It helps in arranging the money for investment purposes in the economy . Its mobilise the small savings of the public through investment . We know that developing countries likes India lacks capital accumulation which is crucial for the development of a developing country like India .its discourages the idle hoarding of the money in the house .it helps in creating an environment of investment in the country .

Today , mutual fund industry is going on very strongly , as per economic times report while speaking on the country 's mutual fund penetrations levels remain considerably low compared to large economies .

While speaking on the country' s economic growth , Parekh said growth is likely to be strong in FY 2022 on the back of a favourable base effect , supportive fiscal and monetary policy , and buoyant global environment . In addition , Parekh lauded sebi 's new framework on allgning interest of key employees with unit holders of the mutual funds scheme but belives more flexibility should be given to staffers to select set of schemes they want to invest .

Such employees should be given flexibility based on their Owen risk profile within the limits of 20 per cent set by the regulator he added the regulator has been requested for some modifications to the circular, he added

"let the key employees decide on their Owen risk profile and allocated in respective schemes. Also the regulator has been fair in terms of computing 20 percent limit post deduction of mandatory retrial funds and tax ,SEBI b, in April, ask asset management companies to pay at least 20 percent of gross salary of key employees in the form of the units of the scheme managed by them . The new rules covers all key employees who have been defined as held of various functions and all employees who are involved in the fund management process fund manager, research teams and dealers among others.

Overall the industry s assets under management rose by 41 percent year on year to close at 31.4 lakh caror over the past five. The industry s AUM has seen a compound annual growth rate of 20.6 per cent , and equity oriented has increased of 25 percent . More ever the healthy investment growth in 04 f.y 21 and thrust of central government to push spending through higher budgetary allocation , improving acsees infa structure financing among other should aid the revival he added

The US stock market have always been an enigma to Indian retail investors . Some of the biggest companies in the world are listed there .Now , that there are various ways to invest in the US stock markets, directly and indirectly , this study comparing between the two and how they performed in the last ten years .for the us markets Dow Jones industrial average index (DJI) as a proxy and for the Indian stock markets , I used our very own BSE Sensex , I decided to compare and contrast the following parameters performance of return , correlation between two Market , volatility top performing sector , valuation , size in the last ten years both the US and Indian market have generated a similar return for their investors . The DJI has generated a compounded annual return of 9.70 % in the last ten years . The return in the first five years of the decade (2011 - 2015) were also pretty similar with the us market growing at 12.86 % compounded annually whereas the Indian market free at 12.11 % compounded annually . In the table below ,

Years	Sensex	Dow Jones
2011	-15.67%	2.74%
2012	12.99%	3.73%
2013	6.41 %	19.60%
2014	34.5%	13.53%
2015	-10.50%	1.52%

2016	7.60 %	20.2%
2017	23.14 %	24.44%
2018	0.29 %	-10.79
2019	13.78%	14.16 %
2020	12.14%	6.70%

In term of yearly performance , the BSE is better performance of last two year of the covid 19 lockdown situation . Overall Indian mutual fund industry is growing better performance of the current years . but , as on today , mutual fund industry is on very strongly .

India is a mid cap success story .in emerging markets , an active fund tends to do better then indices , which might not be applicable to developed markets. Since India is still a few years awry from becoming a developed economy we can expect this out performance to continue"

CONCLUSION

The mutual funds industry helps the channelization of savings into financial assets and thereby actively contribute in the growth of national economy. In the years to come as the economy progresses mutual fund industry will grow in size , products and further help to boost the progress of the country .

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AN OVERVIEW: HIGH TEMPERATURE SUPERCONDUCTORS

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ABSTRACT:
Superconductors are materials with a resistivity of zero. They are familiar to the overall public because of their practical applications and are mentioned at variety of points within the text. Because the resistance of a bit of superconductor is zero, there are not any heat losses for currents through them; they're utilized in magnets needing high currents, such as in MRI machines, and will cut energy losses in power transmission. But most superconductors must be cooled to temperatures only a couple of kelvin above temperature , a costly procedure limiting their practical applications. In the past decade, tremendous advances have been made in producing materials that become superconductors at relatively high temperatures.In this paper I will give a brief introduction about superconductors, their properties. Later we'll formulate various theories for explaining those properties. We will talk about hight temperature superconductors, abbreviated as HTSC. It is the hot topic in Superconductivity domain, and since the discovery of first HTSC by Muller and Bednorz, people have tried innumerable compositions of elements to form new HTSCs with better transition temperature (temperature below which the compound show super conductive behaviour).

Keywords: superconductivity, High temperature, Heat Capacity

INTRODUCTION

The history of superconductivity dates to 1911, when Heike Kamerlingh Onnes discovered the property in mercury that had been cooled to −269° Celsius (about −452° Fahrenheit).But the sector took a giant leap in the mid 1980s. That's when J. Georg Bednorz and K. Alex Müller, twiddling with a category of materials overlooked by other scientists, discovered a oxide compound ready to superconduct at -238° C.While still pretty chilly, that's far warmer than liquid helium temperatures. So it became referred to as the primary "high-temperature superconductor" ever discovered. The Nobel-prize winning news hinted that scientists might eventually find superconductors that employment in warmer (albeit still chilly!) environments attainable with nitrogen (-196° C, or -320° F), which is cheap and plentiful.You can consider these materials (referred to also as HTS or high-Tc superconductors) as super duper conductors. After their discovery, all heck broke loose as scientists scrambled to seek out materials that superconduct at ever warmer temperatures. Many dreamed of transformative discoveries that would dramatically cut the value of transmitting electricity.

Onnes had been the primary person to liquefy helium a couple of years earlier and was surprised to watch the resistivity of a mediocre conductor like mercury drop to zero at a temperature of 4.2 K. We define the temperature at which and below which a cloth becomes a superconductor to be its critical temperature, denoted by Tc. (See Figure 1.) Progress in understanding how and why a cloth became a superconductor was relatively slow, with the primary workable theory coming in 1957. Certain other elements were also found to become superconductors, but all had Tc s but 10 K, which are expensive to take care of . Although Onnes received a Nobel prize in 1913, it had been primarily for his work with liquid helium.
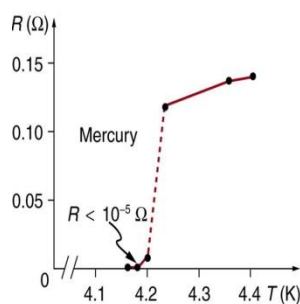
Figure 1.

A graph of resistivity versus temperature for a superconductor shows a pointy transition to zero at the critical temperature Tc. High temperature superconductors have verifiable Tcs greater than 125 K, well above the easily achieved 77-K temperature of nitrogen .

In 1986, a breakthrough was announced—a ceramic compound was found to have an unprecedented Tc of 35 K. It looked as if much higher critical temperatures might be possible, and by early 1988 another ceramic (this of thallium, calcium, barium, copper, and oxygen) had been found to have Tc = 125 K (see Figure 2.) The economic potential of perfect conductors saving electric energy is immense for Tc s above 77 K, since that is the temperature of liquid nitrogen. Although liquid helium features a boiling point of 4 K and may be wont to make materials superconducting, it costs about $5 per liter. Liquid nitrogen boils at 77 K, but only costs about $0.30 per liter. There was general euphoria at the invention of those complex ceramic superconductors, but this soon subsided with the sobering difficulty of forming them into usable wires. The first commercial use of a heat superconductor is in an electronic filter for cellular phones. High-temperature superconductors are utilized in experimental apparatus, and that they are actively being researched, particularly in thin film applications.
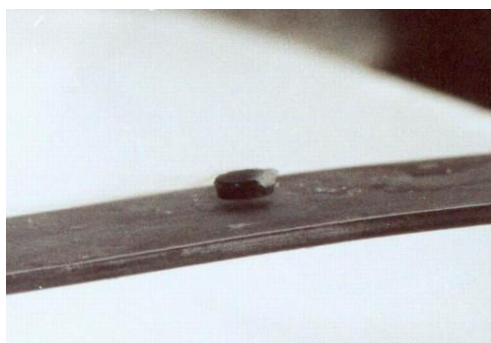
Figure 2.

One characteristic of a superconductor is that it excludes magnetic flux and, thus, repels other magnets. the tiny magnet levitated above a high-temperature superconductor, which is cooled by nitrogen , gives evidence that the fabric is superconducting. When the fabric warms and becomes conducting, magnetic flux can penetrate it, and therefore the magnet will rest upon it. (credit: Saperaud)

The search is on for even higher Tc superconductors, many of complex and exotic oxide ceramics, sometimes including strontium, mercury, or yttrium also as barium, calcium, and other elements. temperature (about 293 K) would be ideal, but any temperature on the brink of temperature is comparatively cheap to supply and maintain. There are persistent reports of Tc s over 200 K and a few within the vicinity of 270 K. Unfortunately, these observations aren't routinely reproducible, with samples losing their superconducting nature once heated and recooled (cycled) a couple of times (see Figure 3.) they're now called USOs or unidentified superconducting objects, out of frustration and therefore the refusal of some samples to point out high Tc albeit produced within the same manner as others. Reproducibility is crucial to discovery, and researchers are justifiably reluctant to say the breakthrough all of them seek. Time will tell whether USOs are real or an experimental quirk.
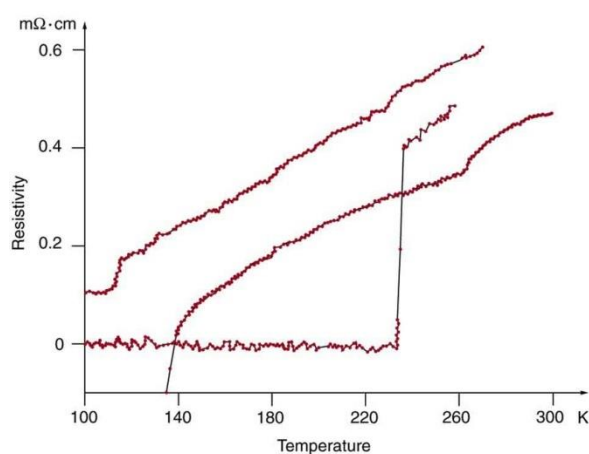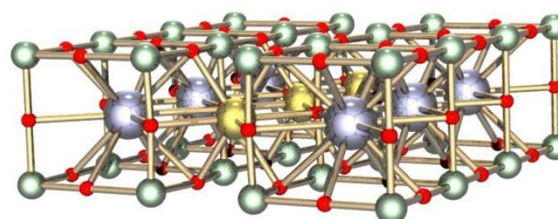
Figure 3. (a) This graph, adapted from a piece of writing in Physics Today, shows the behavior of one sample of a high-temperature superconductor in three different trials. In one case the sample exhibited a Tc of about 230 K, whereas within the others it didn't become superconducting in the

least . the shortage of reproducibility is typical of forefront experiments and prohibits definitive conclusions. (b) This colorful diagram shows the complex but systematic nature of the lattice structure of a high-temperature superconducting ceramic. (credit: en:Cadmium, Wikimedia Commons)

The theory of ordinary superconductors is difficult, involving quantum effects for widely separated electrons traveling through a cloth . Electrons couple during a manner that permits them to urge through the fabric without losing energy thereto , making it a superconductor. High-Tc superconductors are harder to know theoretically, but theorists seem to be closing in on a workable theory. the problem of understanding how electrons can sneak through materials without losing energy in collisions is even greater at higher temperatures, where vibrating atoms should get within the way. Discoverers of high Tc may feel something analogous to what an official once said upon an unexpected election victory—"I wonder what we did right?"

Theories of Superconductivity

Here we provides a brief explanation about the 2 main theories which led to the event of recent superconductivity research regimes. These theories described the superconductivity phenomenon with utmost essence and hence are of utmost importance when discussing superconductors

1. London Theory

(i)First London Equation

The Meissner effect was given a phenomenological explanation by the brothers Fritz and Heinz London, who showed that the electromagnetic free energy during a superconductor is minimized provided

$\nabla 2H = \lambda -2H$ (1)

Where H is that the magnetic flux and λ is that the London penetration depth. We'll discuss this in short.

The first London equation deals with the effect of an electrical field on a superconductor. it's assumed the electrons are freed from the influence of the ions within the solid which they obey Newtons equations of motion, that is

,F = Ee = mdv/dt (2)

where,

v = (Ee/m)t (3)

for n electrons per unit volume, the present density is J = nev = Ee 2 /m t (4)

which implies,

dJ/dt = Ee 2 /m2 (5)

Note that this behaviour isn't observed in metals, as equation (5) shows that as time increases current density increases. What we'll do is we'll attempt to incorporate the varies scattering events happening, by replacing electron velocity v by VD.

So, $eE = m (dvD/dt + vD/\tau)$ (6)

where VD is drift velocity of electrons.

Also at equilibrium, dvD/dt = 0 (7)

this suggests , from equation (6), $vD = e\tau E/m$ (8)

This results in the Ohm's law, I = NevD = E/R (9)

Where resistance is given by, R = m/Ne2 r (10)

The basic assumption in London theory is that at coldness electrons don't scatter and

obey electron equations. So equation (5) will inherit picture here,

which is, dJs/dt = Ee 2 /m2

where, Js = nsev (11)

Equation (5) describes London's first equation. Here ns is effective number of superconducting electrons.

(ii) London's Second Equation

The second London equation cares with the magnetic flux of superconductors [4].

E = E0 + Ekin + Emag (12)

Where E0 is that the energy of a electron at rest within the absence of any field .

Ekin = ns Z dr(1/2)mv2 = m/ 2e 2ns Z drJ 2 s (13)

Using Maxwell's equations of EM waves,Jg = (c/4π)∇ × B~ (14)

Where B is that the magnetic flux ,

Ekin = mc2 / 32π 2 e 2ns Z ∇×∇×Bdr ~ (15)

using,curl(curlB) = grad(div(B)) − ∇2B (16)

Also,∇ • B = 0 (17)

Ekin = − λ 2 /8π Z dr∇2B (18)

λ 2 = mc2 /4π 2 e 2ns (19)

Emag = (1/8π) Z drB 2 (20)

E = E0 + (1/8π) Z dr B 2 − λ 2∇2B (21)

To minimize this energy the integral term must attend zero, ∇2B = KLB (22) Where KL = 1/λ 2, London response function. an identical equation is valid for superconductors and may be derived using an equivalent method we wont to derive equation (22). ∇2Jn = Jsλ 2 (23) this is often London's second equation

2. Bardeen-Cooper-Schrieffer (BCS) Theory of Superconductivity

A theory of superconductivity formulated by Bardeen , Leon Cooper, and Robert Schrieffer. It explains the phenomenon during which a current of electron pairs flows without resistance in certain materials at low temperatures. this will happen, therefore the theory says, when one charged electron slightly distorts the lattice of atoms within the superconductor, drawing toward it a little more than charge . This excess, in turn, attracts a second electron. it's this weak, indirect attraction that binds the electrons together, into a Cooper pair.

In 1957, Bardeen, Cooper and Schrieffer (BCS) proposed a theory that explained the microscopic origins of superconductivity, and will quantitatively predict the properties of superconductors. before this, there was Ginzburg-Landau theory, suggested in 1950, which was a macroscopic theory. this may not be addressed here, but Ginzburg-Landau theory are often derived from BCS theory.

Cooper pair production

Mathematically, BCS theory is complex, but relies on an earlier 'discovery' by Cooper (1956), who showed that the bottom state of a cloth is unstable with reference to pairs of 'bound' electrons. These pairs are referred to as Cooper pairs and are formed by electron-phonon interactions - an electron within the cation lattice will distort the lattice around it, creating a neighborhood of greater charge density around itself. Another electron at a long way within the lattice is then interested in this charge distortion (phonon) - the electron-phonon interaction. The electrons are thus indirectly interested in one another and form a Cooper pair - an attraction between two electrons mediated by the lattice which creates a 'bound' state of the 2 electrons:

The BCS theory consistent with classical physics, a part of the resistance of a metal is thanks to collisions between free electrons and therefore the crystal lattice's vibrations, referred to as phonons. additionally , a part of the resistance is thanks to scattering of electrons from impurities or defects within the conductor. As a result, the question arose on why this doesn't happen in superconductors? In BCS theory electrons during a superconductor exhibit, under certain circumstances, not the traditional coulombic repulsion but an attraction mediated by the interaction of the electrons with the vibrations (the phonons) of the solid. This attractive interaction occurs in Cooper-pair states, defined as antisymmetric, two-electron states of the shape |kα, kβi where k is that the linear-momentum quantum number and α and β ask electron spins. This attractive interaction has the effect of replacing the traditional (HartreeFock) state HFi by a superconducting state 11) composed of a superposition of Cooper-pair states. The electron that are sure to form a cooper pair also follow Pauli's Pauli Exclusion Principle, so so as to interrupt a cooper pair, we'll need to give some energy. This energy we'll denote as

δ, this energy is temperature dependent and his highest at low temperatures. So how this theory does explains the low resistivity of superconductors? during a normal conductor an electron with quantum number k is scattered by ion to a different state k 0 and provides rise to electric resistance R but just in case of cooper pairs, the linear momentum is zero, so its state can't be changed without disturbing the state of the cooper pairs. And as we said earlier we'd like δ(T) energy to try to to that. BCS thory gives an expression for an equivalent at different temperatures.

$\Delta(T = 0) = 1.764 k B T c$ (24)

near T=0, and for T→ Tc, we have. $\Delta(T)/\Delta(0) = 3.2 k B T c (1 − T /Tc) 1/2$ (25)

Tc being the critical temperature of superconductos.

Also,

$k B T c = 1.13 h\omega \exp[−1/N(0)V]$ (26)

Where ω denotes average phonon energy. N(0) is that the density of states at fermi level and V denotes electron-electron interaction inside a cooper.

Experimental Support: BCS Theory

Electrons acting as pairs via lattice interaction? How did they are available up thereupon idea for the BCS theory of superconductivity? The evidence for alittle band gap at the Fermi level was a key piece within the puzzle. That evidence comes from the existence of a critical temperature, the existence of a critical magnetic flux , and therefore the exponential nature of the warmth capacity variation within the Type I superconductors.

The evidence for interaction with the space lattice came first from the isotope effect on the critical temperature.The band gap suggested a phase change during which there was a sort of condensation, sort of a Bose-Einstein condensation, but electrons alone cannot condense into an equivalent energy state (Pauli exclusion principle). Yet a drastic change in conductivity demanded a drastic change in electron behavior. Perhaps coupled pairs of electrons with antiparallel spins could act like bosons?

Measured Superconducter Bandgap

After Rohlf, Modern Physics
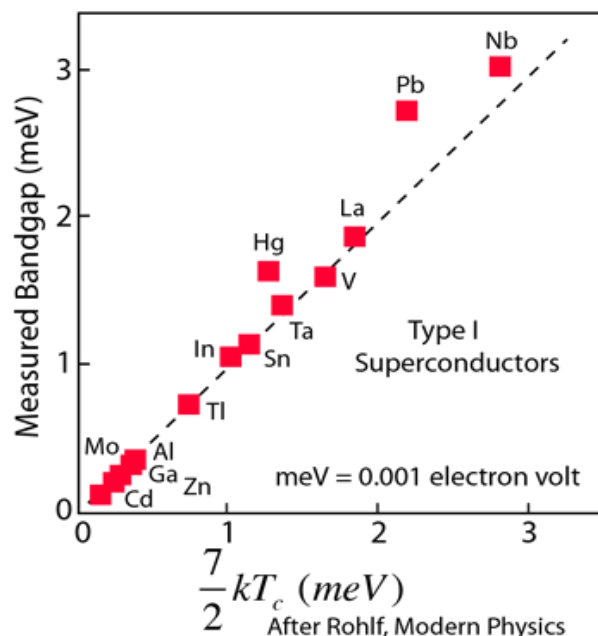
The measured bandgap in Type I superconductors is one of the pieces of experimental evidence which supports the BCS theory. The BCS theory predicts a bandgap of

$$E_g \approx \frac{7}{2} k T_c$$

where Tc is that the critical temperature for the superconductor. The energy gap is said to the coherence length for the superconductor, one among the 2 characteristic lengths related to superconductivity.

Energy Gap in Superconductors as a Function of Temperature
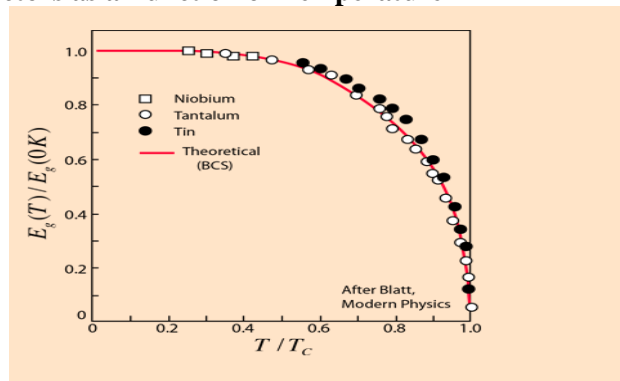
The effective energy gap in superconductors are often measured in microwave absorption experiments. the info at left offer general confirmation of the BCS theory of superconductivity. the info is attributed to Townsend and Sutton.

The reduction of the energy gap as you approach the critical temperature are often taken as a sign that the charge carriers have some kind of collective nature. That is, the charge carriers must contains a minimum of two things which are bound together, and therefore the separation energy is weakening as you approach the critical temperature. Above the critical temperature, such collections don't exist, and normal resistivity prevails. this type of evidence, along side the isotope effect which showed that the space lattice was involved, helped to suggest the image of paired electrons bound together by phonon interactions with the lattice.

Vanadium Heat Capacity
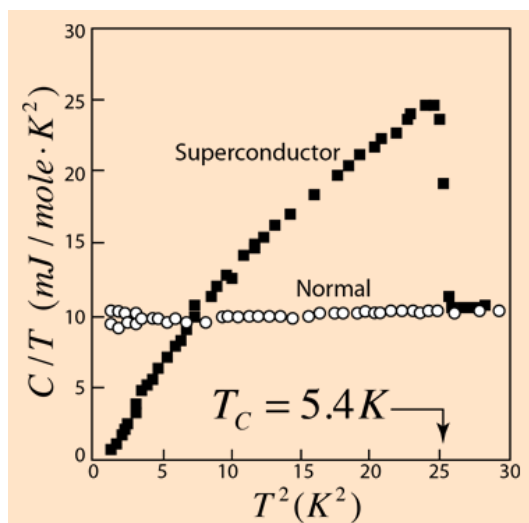
The heat capacity of superconducting vanadium is extremely different from that of vanadium which is kept within the normal state by imposing a magnetic flux on the sample. The exponential increase in heat capacity near the critical temperature suggests an energy bandgap for the superconducting material. This evidence for a band gap is one among the pieces of experimental evidence which supports the BCS theory of superconductivity.

Exponential Heat Capacity

As it is warmed toward its critical temperature, the warmth capacity of vanadium increases 100-fold in only 4 K. This exponential increase suggests an energy gap which must be bridged by thermal energy. This energy gap evidence was a part of the experimental motivation for the BCS theory of superconductivity.

From comparisons with other methods of determining the band gap, it's found that the constant "b" within the exponential heat capacity expression is one-half the band gap energy. If the slope of the road within the illustration is decided by scaling, it's about b=7.4k, like an energy gap of about 1.3 meV. this is often slightly less than the worth obtained by other methods. the worth predicted for vanadium from its critical temperature of 5.38 K by the BCS theory is 1.6 meV, and therefore the measured value is on the brink of that.
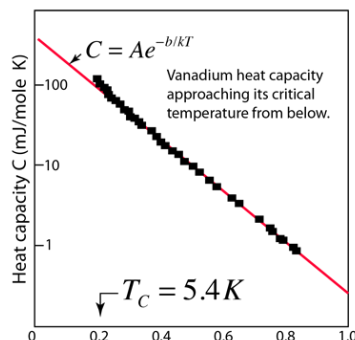
For an extended time this was the simplest they might reach and thought that this is often it, and that we cannot go further and therefore the field of superconductors appeared to saturate. With lack of interest and scope opportunities. Then in 1986 Muller and Bednorz established that superconducting which will exist above 30K too in oxides. the fabric they chose was Y Ba2Cu3O7, which is usually referred as 1-2- 3 superconductor or YBCO superconductor. Its critical temperature or transition temperature was >77K, which is liquid nitrogen's boiling point, meaning it had been now feasible to use nitrogen to chill to such temperatures. The unit of Y Ba2Cu3O7 is formed from three pseudo cubic elementary perovskite unit cells. it's a Y or Ba atom at the middle with Ba being at rock bottom unit , Y at the center , and Ba at the highest of unit . Thus, Y and Ba are stacked within the sequence [BaYBa] along the c-axis. All corner sites of the unit are occupied by Cu, which has two different coordination, Cu1 and Cu2, with reference to oxygen. There are four possible crystallographic sites for oxygen: O1, O2,

In BCS theory the critical temperature may be a function of the phonon frequency, electron-electron interaction potential, and therefore the density of the orbitals at the Fermi level. In BCS theory FermiDirac statistics are applied to the individual electrons while in sudden-polarization theory Boltzmann statistics are applied to M-electron, singlet states electrons. It is clear that the planet of superconductors is still yet to be explored. And it holds innumerable possibility of usages for humanity. The appreciation towards this field should be maintained, for this is often one among the sole domains in physics which has still an enormous scope of discoveries and inventions.

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EFFECTS OF PHYSICAL INFRASTRUCTURE ON AGRICULTURAL DEVELOPMENT IN KARNATAKA

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ABSTRACT

The present study analyzed the effect of physical infrastructure on agricultural development in the southern Indian state of Karnataka. The study used Karnataka State at a glance data from 2011 to 2020 period, physical infrastructure availability like road transportation and agricultural production and examines the relationship between the physical infrastructure and agricultural development. The regression analysis showed that physical infrastructure (road transportation) had positive and significant effect on agricultural productivity growth. The effects of physical infrastructure on agriculture productivity growth were found. Further, the combined effect of availability and utilization of physical infrastructure had larger effect on agricultural productivity.

Keywords: Infrastructure development, agricultural productivity, India

BACKGROUND

It is well recognized that agricultural development is important for achieving higher economic growth, increased rural incomes, food security and progress of marginalized sections and regions in the developing economies (Dethier and Effenberger 2012; Timmer 2002). Among various factors that influence the growth and productivity levels of agricultural sector, infrastructure has been identified as a crucial one (Binswanger et al. 1989; Fan and Zhang 2004; Thorat et al. 2003). Advancements in technology may not bring about desired levels of economic development due to lack of infrastructure and inadequate education (Thirtle et al. 2001). Further, investment in infrastructure facilities tends to reduce transport cost, increased competition and higher farm incomes thereby creating a conductive environment for private investment (FAO 1996). Better rural infrastructure can trigger a set of processes that might bring about greater productivity in farm and non-farm sector resulting in greater employment opportunities in rural areas (Canning and Pedroni 2004).

Productivity increases in agriculture can benefit the overall rural economy through forward and backward linkages (The World Bank 2007). But the distribution of productivity gains from agriculture varied across the regions due to differences in natural resource endowments, intensity of inputs use, insufficient provision and utilization of infrastructure (Bhalla and Singh 2012; Llanto 2012).

India's agricultural sector has witnessed rapid developments since the introduction of Green Revolution technologies in the late 1960s. Technological developments particularly in staple crops, such as rice and wheat, helped to improve the food production, rural incomes and employment considerably (Baker and Jewitt 2007; Hazell et al. 1991). However, a large proportion of such gains had accrued to the regions that were already well developed in physical infrastructures, such as roads, credit institutions and market facilities, and rich in natural resources (Rao 1975; Vaidyanathan 1988). Despite many efforts taken by the government to boost the public investment in rural infrastructures in the underdeveloped regions, the income disparity between the developed and underdeveloped regions in the country continued to widen (Chakravorthy et al. 2016; Krishnaji 1975; Rao 1994: 106; 1996).

The region-specific characteristics should be taken into consideration while making infrastructure investment decisions to reduce the imbalances in regional development through accelerating growth in agricultural sector. Fulfilling the infrastructure requirements of India's agricultural sector without further worsening the existing regional disparities is need of the day. However, such an effort requires a comprehensive appraisal of the existing rural infrastructure and analysis of its effects on agricultural development. In India, empirical studies focusing on rural infrastructure and agricultural development at disaggregate level are much limited. These existing studies have largely examined only the issue of provisioning of basic infrastructures stock and they did not give much importance to how far the created infrastructures were utilized for the development of agricultural sector. The present study fulfils this gap in the literature by analyzing the effects of physical infrastructure on agricultural development.

The present study uses the district-level data for the southern Indian state of Karnataka for the analysis. The physical infrastructure variables that may have direct and indirect impact on the agricultural development have been used. It is expected that the districts with well-endowed natural resources and better physical infrastructure will have greater impact on agricultural productivity. It is hoped that a district- level study on analyzing the impact of physical infrastructure on the agricultural development will go a long way in identification of the

priority areas for making investment on appropriate rural infrastructures. The rest of the article is organized as follows. The next section presents a brief review of literature. Data sources and analytical framework are provided in the third and fourth section, respectively. The fifth section discusses the empirical results on the relationship between agricultural productivity and physical infrastructure. The results of spatial convergence in agricultural productivity are presented in the sixth section. The concluding remarks are made in the final section.

BRIEF REVIEW OF LITERATURE

Following the methodological contribution of Aschauer (1989), some studies have examined the role of infrastructure in boosting productivity using approaches such as production function, cost function and growth accounting methods. While analyzing the importance of infrastructure for agricultural development, Felloni et al. (2001) found a significant contribution of transportation and energy sectors to agricultural production. Using farm-level data from Nigeria, Fakayode et al. (2008) analyzed the effect of infrastructure on agricultural productivity. The study found that fertilizer use, land and rural infrastructure index had a positive impact on agricultural productivity. Li and Liu (2009) found significant effect of road, electricity, water supply and education on technical efficiency of China's agricultural production. Deficiency in infrastructure development was more severe constraint than exploitative land tenure system in increasing land productivity (Spencer 1994).

The development of infrastructure facilities helped in mitigating regional disparities through net- work effects (Hulten and Schwab 1991). In fact, Evenson (1986) found that investment in roads had positive impact on aggregate farm-level output. Similarly, Dorosh et al. (2010) found that adoption of high-input technology was negatively correlated with travel time to urban centre thereby emphasizing the need to bring about improvement in road connectivity to the markets. In fact, Llanto (2012) found that deficiencies in rural infrastructures such as transportation, energy and related infrastructure showed adverse impact on agricultural productivity and poverty reduction in Africa. Iimi and Smith (2007) also arrived at similar conclusions in Sub-Saharan Africa. Impact of rural infrastructure on poverty reduction and pathways through which such impact could be realized had been established in Ali and Pernia (2003). Some studies have analyzed the effects of infrastructure on agricultural productivity growth in India (Binswanger et al. 1989; Fan et al. 1999; Fan and Zhang 2004; Munnell 1990; Wanmali and Ramasamy 1995). Rosegrant and Evenson (1995) and Kannan (2011) found that investment on agricultural research, extension, markets and irrigation had a significant effect on total factor productivity growth in India's crop sector.

Similarly, Zhang and Fan (2001) found a positive effect of infrastructure development on India's agricultural productivity. Among infrastructure types, roads and irrigation found to have significant impact on the total factor productivity growth. Datt and Ravallion (1998) explained that regions with better initial endowments of infrastructure achieved higher agricultural output growth than that of poor resource regions. Similarly, Binswanger et al. (1989) contended that while all the infrastructure facilities are crucial in accelerating agricultural growth, some facilities, such as credit institutions and markets, bring more impact on output than other physical infrastructures. Majumder (2003) observed that the association between infrastructure and development was substantially positive in intermediately developed regions but insignificant in advanced regions exploring the impact of physical infrastructure on land productivity at a district level in the Indian state of Orissa.

Nayak (2008) found significant role of irrigation and electricity infrastructures in raising land productivity. Fan et al. (1999) showed that public spending on rural infrastructures especially on roads and education contributed directly to reducing rural poverty, and indirectly to growth in agricultural productivity. Similarly, Thorat et al. (2003) found that public investment on transport, power, irrigation and research infrastructure had a positive influence on India's agricultural productivity and reducing rural poverty. Ashok and Balasubramanian (2006) found a positive impact of irrigation, roads, markets and literacy on total factor productivity in the state of Tamil Nadu in India. Venkatachalam (2003) analyzed the level of development of various kinds of infrastructural facilities in different districts of Karnataka, but the study did not establish the relationship between infrastructure and agricultural development.

It is clear from the past studies that physical infrastructure played a significant role in accelerating agricultural productivity growth and for overall development of rural economy. However, these studies focused only on the provision of infrastructure stock. The district level aspects of the infrastructures have not been accounted for explaining the differences in productivity. Further, not only the provision of infrastructure facilities matter for the development of rural economy but also its effective use for conducting various economic activities.

DATA SOURCES

Data on agriculture and rural infrastructure development indicators were compiled from various published sources. The district-level data on infrastructure indicators were compiled from the Statistical Abstract of

Karnataka, Reports of Karnataka Food and Civil Supplies Corporation, Directorate of Economics and Statistics (DES). All the data were compiled for 30 districts for the period 2010–11 to 2019–20. In the present study physical infrastructures and agricultural productivity studied. In physical infrastructure road transportation indicator and in agricultural development agriculture productivity indicators were took (in tones) to find used spearman Co-efficient of Correlation.

ANALYTICAL FRAMEWORK

The concept of infrastructure has evolved over time. According to Hirschman (1958), infrastructure refers to those basic services without which primary, secondary and tertiary productive activities cannot function. According to the World Bank (1994), infrastructure is an umbrella term for many activities referred to as 'social overhead capital' as proposed by the development economists, such as Paul Rosenstein-Rodan, Ragnar Nurkse and Albert Hirschman. The adequacy of infrastructure is closely linked with optimum use of the existing infrastructure. Therefore, assessing the utilization of infrastructure is also a pathway through which the effect of infrastructure on development of a region can be captured. Analysis of how well a unit, whether state or district performs with regard to the infrastructure facilities should consider how much the built-up infrastructure is put to use. For example, provision of irrigation facilities is an important infrastructure that needs to be augmented by extending the length of canals. The mere existence of canals may not be taken as an indicator of irrigation development unless it has been utilized effectively by the farmers. A region may be said to have developed in irrigation infra- structure when both availability of canals and the optimum use of these canals for irrigation purposes are evident.

As much as infrastructures are made available, access to infrastructure and their quality are important to have a significant impact on the local economy. As Hulten (1996) has stressed that additional capital formation would be of little help in stimulating economic growth if the capital stocks are not used effectively. Rather than just making the infrastructure provisions available, it is also important to see how these provisions utilized. The indicators chosen for each type of infrastructure should reflect its availability as well as utilization. The availability of infrastructure shows the stock of infrastructure provisions in the economy and the utilization of infrastructure refers to the use of these facilities or flow of services for the desired purposes. While most studies confirm the importance of building up and expanding the infrastructure in the rural areas, little attention has been paid to how well these infrastructures have been utilized. It is possible that a region may be endowed with a variety of infra- structure facilities, yet it falls short of expected outcomes due to inefficient utilization. Underutilization could result from many factors, such as inaccessibility to the infrastructures, lack of affordability and inefficient service delivery.

The present study considers physical infrastructure facilities and the services made available to the farmers for the purpose of facilitating and enhancing agricultural production. According to Pinstrup-Andersen and Shimokawa (2007), these facilitating factors can be largely grouped under the term infrastructure. For analytical purpose, physical infrastructure would, therefore, include the facilities and services that largely contribute to the development of rural economy and those that have a bearing on the agricultural development either directly or indirectly.

EMPIRICAL ANALYSIS

Relationship between Physical Infrastructure and Agricultural Productivity

To establish the linkage between rural infrastructure and agricultural productivity, different econometric specifications have been used. The present study uses the spearman co-efficient of correlation analyzing the relationship between physical infrastructure and agricultural development in Karnataka.

Table No. 01: Trends of Karnataka Total Road length and Agriculture Production

Sl No.	Years	Total Production (in tones)	Total Road Length (km)
01	2011	54486174	369680.13
02	2012	54486174	318052.90
03	2013	70704430	364719.75
04	2014	64107120	364740.39
05	2015	57497553	376466.55
06	2016	66806134	408085.20
07	2017	70754522	431722.18

08	2018	70754522	431722.18
09	2019	70754522	426804.28
10	2020	80303756	442658.26

Source: State and District at a Glance

Table No. 02: Regression Analysis:

REGRESSION ANALYIS OF ROAD TRANSPORTATION AND AGRICULTURE PRODUCTIVITY					
Regression Statistics					
Multiple R	0.794594969				
R Square	0.631381165				
Adjusted R Square	0.585303811				
Standard Error	5414123.186				
Observations	10				

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.01662E+14	4.02E+14	13.7026349	0.006027789
Residual	8	2.34502E+14	2.93E+13		
Total	9	6.36163E+14			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	1388965.207	17555765.19	0.079117	0.93888254	-39094701.89	41872632.3	-39094701.89	41872632.3
Total Road Length	164.3767439	44.40566002	3.701707	0.00602779	61.97710832	266.7763794	61.977710832	266.7763794

Source: Authors Calculation

CONCLUSIONS AND POLICY IMPLICATIONS:

The present study analyzed the relationship between the Physical infrastructure and agricultural productivity in the southern Indian state of Karnataka. In physical infrastructure, road transportation indicator was taken to examine its impact on agricultural productivity. The study brought out clearly the effects of infrastructure on agricultural productivity. Regression results showed that physical infrastructure had positive and significant effect (Multiple Regression Shows 0.79 and R square 0.63) on agricultural productivity. P value of the both indicators is 0.006 means at 5% level of significance below the 5%. The use of inputs, such as fertilizers and the mechanization were also responsible for significant differences in land productivity across the districts. On the whole, the study points out that development of adequate Physical infrastructure will have significant impact on agricultural productivity growth and has potential to spur the overall rural economy through spillover effects. To capitalize the benefits of infrastructure provisions to the farmers, different types of infrastructure should be created as per the needs of the regions and the government make sure that these provisions are being utilized so as to increase agricultural productivity, which will significantly improve the livelihoods of a majority of rural population.

The findings of the study have important policy implications. There is an urgent need for making greater investment in Physical infrastructures while at the same time calling for the steps to be undertaken to maximize the utilization of existing resources. Assessing the importance of utilization of the infrastructure brings to the fore several key points that may be ignored if the focus remains only on the addition to the existing stock of infrastructure. The basic premise of the availability-utilization framework is that mere provisions or making

infrastructures available may not explain the full developmental processes. The initiatives and interventions of the government should also aim at assessing how well the infrastructures are being made use of, so as to utilize the full potential of resources to reach a higher level of agricultural development especially in the less developed regions. A region-specific strategic plan will help in minimizing the regional disparities within the state of Karnataka.

The net benefit of collectively investing in both creation and utilization of economic, institutional and social infrastructures can be huge for the development of the agrarian economy of Karnataka. The focus should be on providing long-term sustainable quality infrastructure in rural areas, which are not only limited to economic and institutional facilities, but also to invest in strengthening human capital, which is important to stimulate overall economic growth leading to the reduction in regional disparities.

Adequate policy measures should be taken to ensure provision of quality infrastructure in rural areas, which would encourage better utilization of existing infrastructure facilities and enhance agricultural productivity in a sustainable manner. The concerted efforts should be made to identify the priority infra- structures for different areas. Then, there is a need for assessing the amount of investment required from the public and private agencies for providing these priority infrastructures. Given the importance of utilization of infrastructure for agricultural development, a suitable policy should be put in place for continuously assessing the strategies for improving the use of existing or the new infrastructure including awareness programmes for the farmers.

There is also a need for examining the underutilization of existing infrastructures in certain regions and for motivating the farmers to use such infrastructures for enhancing their income. The farmers should be included as important stakeholders whose consultation at the stage of need-analysis for the infrastructural projects and at phases of execution of the projects. This will help in attuning the infrastructure to the specific requirements of the local context and also improve its utilization by instilling a sense of ownership among them. Further research may be required at the district level to bring out the relative importance and possible complementarily among various types of infrastructure in terms of their capacity to influence the agricultural development positively. For example, the presence of adequate transport networks can incentivize the farmers to use the facilities of regulated markets and credit institutions effectively. This means that the complementary nature of the different types of infrastructure needs to be understood at the local level and implemented in an integrated manner. The right mix of different types of infrastructure is important for the optimal utilization with a significant impact on the livelihoods of the farmers.

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TO ASSESS THE EFFECTIVENESS OF PELVIC FLOOR EXERCISE FOR THE STRESS URINARY INCONTINENCE AMONG WOMEN

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ABSTRACT

Introduction

The aim of the study to determine the efficacy of pelvic floor exercise for stress urinary incontinence.

Method

In this study interventional evaluatory approach & time series research design were utilized. This research was carried out in a rural community area of Sawangi (Meghe) Wardha were 30 women who fulfill the criteria of sample selection that women selected as a sample according to non-probability purposive sampling technique.

Result - Significant difference were found before & after pelvic floor exercise. The findings of the severity of stress urinary incontinence were 14 (46.70 %) of women had grade I in pre assessment whereas, 12 (40%) of women had grade I in post assessment. A 16 (53.3%) of women had grade II in pre assessment whereas, 6 (20%) of women had grade II in post assessment. A 12 (40%) of women had grade 0 in post assessment whereas, 0(0%) of women had grade 0 in pre assessment. Significant association was found between the history of mode of delivery of first attempt with stress urinary incontinence (p = 0.022) & also, significant association was found between age (p=0.031), marital status (p = 0.001) & history of mode of delivery of second attempt (p = 0.016) with severity of stress urinary incontinence.

Conclusion - Stress urinary incontinence is the main problem that may develop due to weak pelvic floor muscles & only pelvic floor exercise is a primary treatment to improve pelvic muscle strength.

Key word – Effectiveness, Pelvic floor exercise, Stress urinary incontinence, Severity of stress urinary incontinence, Ingelman-Sundberg scale.

INTRODUCTION

Urinary incontinence is a medical disease in which the urinary bladder loses its control, which can range from a small amount of urine loss during sneezing, coughing, laughing, to a total loss of bladder control. It is a problem of involuntary leakage of urine & classification according to symptoms and incidence of pathophysiological mechanisms. (Norton, Brubaker, 2006)

Urinary stress incontinence is also known as a medical problem in which uncontrollable leakage of urine due to stress, effort, heavy exercise, sneezing, or coughing and urinary stress incontinence is a unique type of urinary incontinence. Urinary stress incontinence have a great effect on the standard of living of women & can restrict professional and individual activity and physical activity among women. (Montgomery, 2014.) Stress urinary incontinence is the commonest issue among females because of internal abdominal pressure like coughing, sneezing, laughing, running, exercises, and exertion. It is commonly found in females above the age of 15 years, stress urinary incontinence affecting certain age ranges and severity will be increased with age. This is a serious social health problem in young females which decreases the standard of living. (Sangsawang, 2013)

The study aims to determine the efficacy of pelvic floor exercise for the prevention and treating stress urinary incontinence. The objective was to assess the stress urinary incontinence among women before & after pelvic floor exercise, to assess the severity of stress urinary incontinence among women before & after pelvic floor exercise, to find out the association between stress urinary incontinence & severity with selected demographic variables.

Urinary incontinence can damage the standard of living of an individual, & it will lead to a disturbing social relationship, depressive symptoms from embarrassment, and hospital stay because of urinary tract infection, skin breakdown. Stress urinary incontinence may affect sexual function. (Palmer, 1996)

Urinary stress incontinence is a common issue, experiencing discomfort, guilt, or complete lack of self-esteem, including significant social and human consequences. It has an impact not only on the standard of living but also on the costs. (Lenderking, Nackley, Anderson et al 1996)

METHODOLOGY

In this study time series research design & an interventional evaluatory approach was used. The research was carried out in the rural community area of Sawangi Meghe, Wardha were 30 females who have fulfill the sample selection criteria that selected as a study sample according to the non-probability purposive sampling technique. Permission was taken from institutional ethical committee. The tools were a structured questionnaire on demographic variables and stress urinary incontinence, Ingelman-Sundberg scale for assessing the severity of stress urinary incontinence, Checklist of pelvic floor exercise used for data collection. The tool was supplied to 12 specialists from various fields of medical surgical nursing, obstetrical & gynecological nursing. Expert suggestions & recommendations were used to make changes in tools. Before collecting data, authorization was received from the relevant authorities in the chosen community area. Consent was received from the sample. Pelvic floor exercise was given by the researcher to the participant. Pilot research was carried out on 3 samples in a selected rural community area salod, Wardha. Data collection process on 1st day pre-assessment of stress urinary incontinence & severity of stress urinary incontinence was done. On the same day, pelvic floor exercise was explained and demonstrated to those women who have grade I and II stress urinary incontinence. Instructed them to empty their bladder. They can sit, stand, and half lie with the leg slightly apart closed & draw around the anal passage as through preventing a bowel action. Then they have to draw up around the vagina and urethra as if to stop the flow of urine in midstream hold for 10 seconds then relax and repeat 10 times. Instructed them to do pelvic floor exercise 3 times/day for 2 weeks (morning, afternoon, night). Researcher monitor activities on 1st,4th,7th, 10th & 13th day after that post-assessment was done after 2 weeks to determine the efficacy of pelvic floor exercise by using tools.

Result
SECTION A
Percentage-wise distribution of women according to demographic variables.

n=30

Demographic Variables	Number of Women (f)	Percentage (%)
Age(yrs)		
31-40 yrs.	13	43.3
41-50 yrs.	4	13.3
51-60 yrs.	8	26.7
>60 yrs.	5	16.7
Marital Status		
Married	19	63.3
Unmarried	0	0
Widow	11	36.7
Number of children		
No children	0	0
One	2	6.7
Two	19	63.3
Three or more	9	30
H/O birth canal injury		
Yes	1	3.3
No	29	96.7
H/O mode of delivery		
1st attempt		
Normal Delivery	28	93.3
LSCS	2	6.7
2nd attempt		
Normal Delivery	24	85.7
LSCS	4	14.2
3rd attempt		
Normal Delivery	6	66.7
LSCS	3	33.3
4th attempt		

Normal Delivery	2	66.7
LSCS	1	33.3
H/O previous abdominal surgery		
Yes	22	73.3
No	8	26.7

SECTION B
Assessment of stress urinary incontinence before & after pelvic floor exercise.

n=30

	Pre assessment	Post assessment	χ^2-value
When Does urine leak			
Never	0(0%)	13(43.3%)	
Leak while running or picking up heavy objects.	17(56.7%)	6(20%)	
Leak when you cough and Sneeze	13(43.3%)	11(36.7%)	18.43 p=0.0006,S
Leak all the time	0(0%)	0(0%)	
Have you ever suddenly passed urine during the day			
Yes	9(30%)	2(6.6%)	5.04
No	21(70%)	28(93.3%)	p=0.019,S
Do you pass urine by continuous dribbling			
Yes	7(23.3%)	1(3.3%)	5.19
No	23(76.7%)	29(96.6%)	p=0.022,S
How much does leaking urine interfere with yours everyday life			
Not at all	0(0%)	10(33.3%)	
A little	9(30%)	17(56.7%)	
Somewhat	9(30%)	3(10%)	27.46 p=0.0001,S
A lot	12(40%)	0(0%)	
If you need to go to the toilet to pass urine, how long can you hold on			
0-1 minutes	17(56.7%)	0(0%)	
1-5 minutes	10(33.3%)	11(36.7%)	
5-10 minutes	3(10%)	9(30%)	20.05 p=0.0001,S
>10 minutes	0(0%)	10(33.3%)	

SECTION C
Significance of difference between the severity of stress urinary incontinence among women before & after pelvic floor exercise.

n = 30

	Pre assessment	Post assessment	χ^2-value
Grade 0	0(0%)	12(40%)	
Grade I	14(46.7%)	12(40%)	16.70 p=0.0002,S
Grade II	16(53.3%)	6(20%)	

Grades of stress urinary incontinence are compared by using the Chi-square test. Significant difference was found in pre & post assessment.
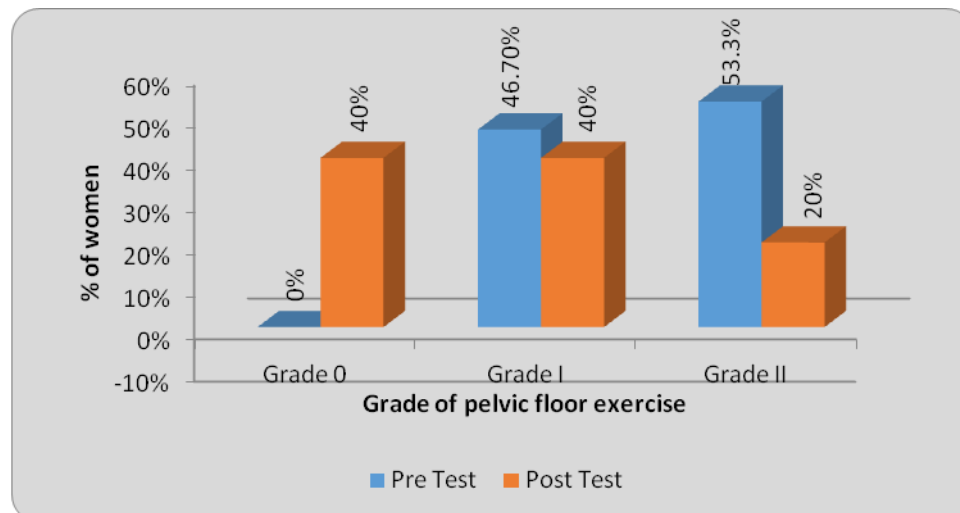
Significance of difference between the severity of stress urinary incontinence before & after pelvic floor exercise.

SECTION D
Association of stress urinary incontinence with selected demographic variables.

n=30

Demographic variables	No. of women(f)	Mean stress urinary incontinency	F-value/ t- value	Df	F- tab value/ t-tab value	p-value
Age (yrs)						
31-40 yrs.	13	10.30±0.75	1.70	3,26	2.98	0.19 NS,p>0.05
41-50 yrs.	4	10.75±1.50				
51-60 yrs.	8	11.12±0.64				
>60 yrs.	5	10.20±1.09				
Marital status						
Married	19	10.63±1.01	0.49	28	2.05	0.62 NS,p>0.05
Unmarried	0	0±0				
Widow	11	10.45±0.82				
Number of children						
No children	0	0±0				
One	2	11.50±2.12	1.30	2,27	3.35	0.28 NS,p>0.05
Two	19	10.57±0.83				
Three or more	9	10.33±0.86				
H/O birth canal injury						
Yes	1	11±0	0.46	28	2.05	0.64 NS,p>0.05
No	29	10.55±0.94				
H/O mode of delivery						
1st attempt						
Normal Delivery	28	10.46±0.83	2.42	28	2.05	0.022 S,p<0.05
LSCS	2	12±1.41				
2nd attempt						
Normal Delivery	24	10.62±0.87	0.27	28	2.05	0.78 NS,p>0.05
LSCS	4	10.50±0.57				
3rd attempt						
Normal Delivery	6	10.33±0.81	1.36	28	2.05	0.21 NS,p>0.05
LSCS	3	11±0				
4th attempt						
Normal Delivery	2	11±0	-	-	-	-
LSCS	1	11±0				

H/O previous abdominal surgery						
Yes	22	10.50±0.96	0.64	28	2.05	0.52
No	8	10.75±0.88				NS,p>0.05

The above table shows the association of stress urinary incontinence with the history of mode of delivery of women in the first attempt.

SECTION E
Association of severity of stress urinary incontinence with selected demographic variables.

n=30

Demographic variable	Severity of stress urinary incontinence			$x2$-value	Df	Tabulated 'x2' values	p-value
	Grade 0	Grade I	Grade II				
Age (yrs.)							
31-40 yrs.	10	2	1	13.88	6	12.59	0.031 S,p<0.05
41-50 yrs.	1	2	1				
51-60 yrs.	1	5	2				
>60 yrs.	0	3	2				
Marital Status							
Married	12	6	1	13.49	2	5.99	0.001 S,p<0.05
Unmarried	0	0	0				
Widow	0	6	5				
Number of children							
No children	0	0	0	2.38	4	9.49	0.66 NS,p>0.05
One	1	1	0				
Two	9	6	4				
Three or more	2	5	2				
H/O birth canal injury							
Yes	0	1	0	1.55	2	5.99	0.46 NS,p>0.05
No	12	11	6				
H/O mode of delivery							
1st attempt							
Normal Delivery	12	11	5	1.87	2	5.99	0.39 NS,p>0.05
LSCS	0	1	1				
2nd attempt							
Normal Delivery	10	11	3	8.32	2	5.99	0.016 S,p<0.05
LSCS	1	0	3				
3rd attempt							
Normal Delivery	2	3	1	1.35	2	5.99	0.50 NS,p>0.05
LSCS	0	2	1				
4th attempt							
Normal Delivery	1	1	0	0.75	1	3.84	0.38 NS,p>0.05
LSCS	0	1	0				
H/O previous abdominal surgery							
Yes	10	7	5	2.30	2	5.99	0.31 NS, p>0.05
No	2	5	1				

The above table shows the association of severity of stress urinary incontinence with age in years of women,

marital status of women, and history of mode of delivery of women in the second attempt.

DISCUSSION

In this present study, the stress urinary incontinence is identified when unintentional leaking of urine with sudden pressure on the abdomen. According to analysis, it is found that 17(56.7%) of women had urine leak during running or picking up heavy objects in pre assessment whereas, 6 (20%) of women had urine leak during running or picking up heavy objects in post assessment. 13(43.3%) of women had urine leak when cough and sneeze in pre assessment whereas, 11(36.7%) of women had urine leak when cough and sneeze post assessment. 13 (43.3%) of women had urine never leak in post assessment whereas, 0(0%) of women had urine never leak in pre assessment. 9(30%) of women had urine passed suddenly during the day in pre assessment whereas, 2(6.67%) of women had urine passed suddenly during the day in post assessment. 21(70%) of women had urine never passed suddenly during the day in pre assessment whereas, 28(93.33%) of women had urine never passed suddenly during the day in post assessment. 7(23.30%) of women had urine lost by continuous dribbling in pre assessment whereas,1(3.33%) of women had urine lost by continuous dribbling in post assessment. 23(76.7%) of women had urine never lost by continuous dribbling in pre assessment whereas, 29(96.67%) of women had urine never lost by continuous dribbling in post assessment. 9(30%) of women had urine leaking interfere a little in their everyday life in pre assessment whereas, 17(56.70%) of women had urine leaking interfere a little in their everyday life in post assessment. 9(30%) of women had urine leaking interfere somewhat in their everyday life in pre assessment whereas, 3(10%) of women had urine leaking interfere somewhat in their everyday life in post assessment. 12(40%) of women had urine leaking interfere a lot in their everyday life in pre assessment whereas, 0(0%) of women had urine leaking interfere a lot in their everyday life in post assessment. 10(33.30%) of women had urine leaking not at all interfere in their everyday life in post assessment whereas, 0(0%) of women had urine leaking not at all interfere in their everyday life in pre assessment.10(33.3%) of women are holding urine for 1-5 minutes in pre assessment whereas, 11(36.7%) of women are holding urine for 1-5 minutes in post assessment. 3(10%) of women are holding urine for 5-10 minutes in pre assessment whereas, 9(30%) of women are holding urine for 5-10 minutes in post assessment. 0(0%) of women are holding urine for more than 10 minutes in pre assessment whereas, 10(33.3%) of women are holding urine for more than 10 minutes in post assessment. 17(56.7%) of women are holding urine for 0-1 minutes in pre assessment whereas, 0(0%) of women are holding urine for 0-1 minutes in post assessment.

A study was supported by a parallel group randomized controlled trial which was conducted in twenty three community & secondary care centers providing continence care in Scotland & England where 600 women were selected as samples. Mean ICIQ-UI SF scores at 24 months were 8.2 in the biofeedback pelvic floor muscles training group & 8.5 in the pelvic floor muscle training group.(Neumann, Grimmer, Deenadayalan, 2006)

In this present study, 14 (46.70 %) of women had grade I severity of stress urinary incontinence in pre assessment whereas, 12 (40%) of women had grade I severity of stress urinary incontinence in post assessment. 16 (53.3%) of women had grade II severity of stress urinary incontinence in pre assessment whereas, 6 (20%) of women had grade II severity of stress urinary incontinence in post assessment. 12 (40%) of women had a grade 0 severity of stress urinary incontinence in post assessment whereas, 0(0%) of women had a grade 0 severity of stress urinary incontinence in pre assessment.

The research were supported by a prospective longitudinal observational study which was carried out in Tertiary referral urogynecology center, France. This shows, 17 (20%) of women stress urinary incontinence grade 1 was cured whereas, 4 (20%) of women were not cured. 20 (24%) of women stress urinary incontinence grade 2 cured whereas, 4 (20%) of women was not cured. 36 (42%) of women stress urinary incontinence grade 3 cured whereas, 6 (30%) women were not cured.(Bokne, Sjöström, Samuelsson, 2019)

In this present study, the history of mode of delivery of women in the first attempt was significantly associated with their stress urinary incontinence and severity of stress urinary incontinence is significantly associated with age, marital status, & history of mode of delivery of women in the second attempt.

A supportive cross-sectional study were conducted in Iran. In this study, 90 married women were selected randomly. This study revealed that stress urinary incontinence is significantly associated with vaginal delivery (p = 0.035, $p<0.05$).(Langa, Fultz, Saint et al 2002)

CONCLUSION

Stress urinary incontinence is the main problem which may develop due to weak pelvic floor muscles. This research reveals that the assessment of stress urinary incontinence & severity among females is significantly associated with before & after pelvic floor exercise. This research has proven that pelvic floor exercise is beneficial for stress urinary incontinence. Association of severity of stress urinary incontinence found with age

in years of women, marital status of women, and history of mode of delivery of women in the second attempt & association of stress urinary incontinence found with the history of mode of delivery of women in the first attempt.

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IMPACT OF COVID-19 ON COMMERCE AND CHANGING BUSINESS DYNAMICS IN VARIOUS SECTORS OF ECONOMY

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ABSTRACT

This research paper has tried to demonstrate the impact of covid-19 on commerce and how the various sectors of economy has been impacted. Thespecific avenues which this paper has focused on are as follows:

➢ *Impact of covid-19 on Human Resource and Technology*

➢ *Impact of covid-19 on Consumer Durable Sector*

Key Words: Human Resource And Technology, Changing Business Dynamics, Law And Act, Changing Business Dynamics-2021.

SECTOR-WISE IMPACT are highlighted as follows:

I) Human Resource and Technology

The key areas to be taken into consideration

► How do we see Technology in Human Resource Management ?

► What are the areas to be focused upon ?

► Where is the field going ?

► What are the competencies for the future of Human Resource ?

The future of this lies in the territory of e-HRM enquiry, which aredepicted in the images below:
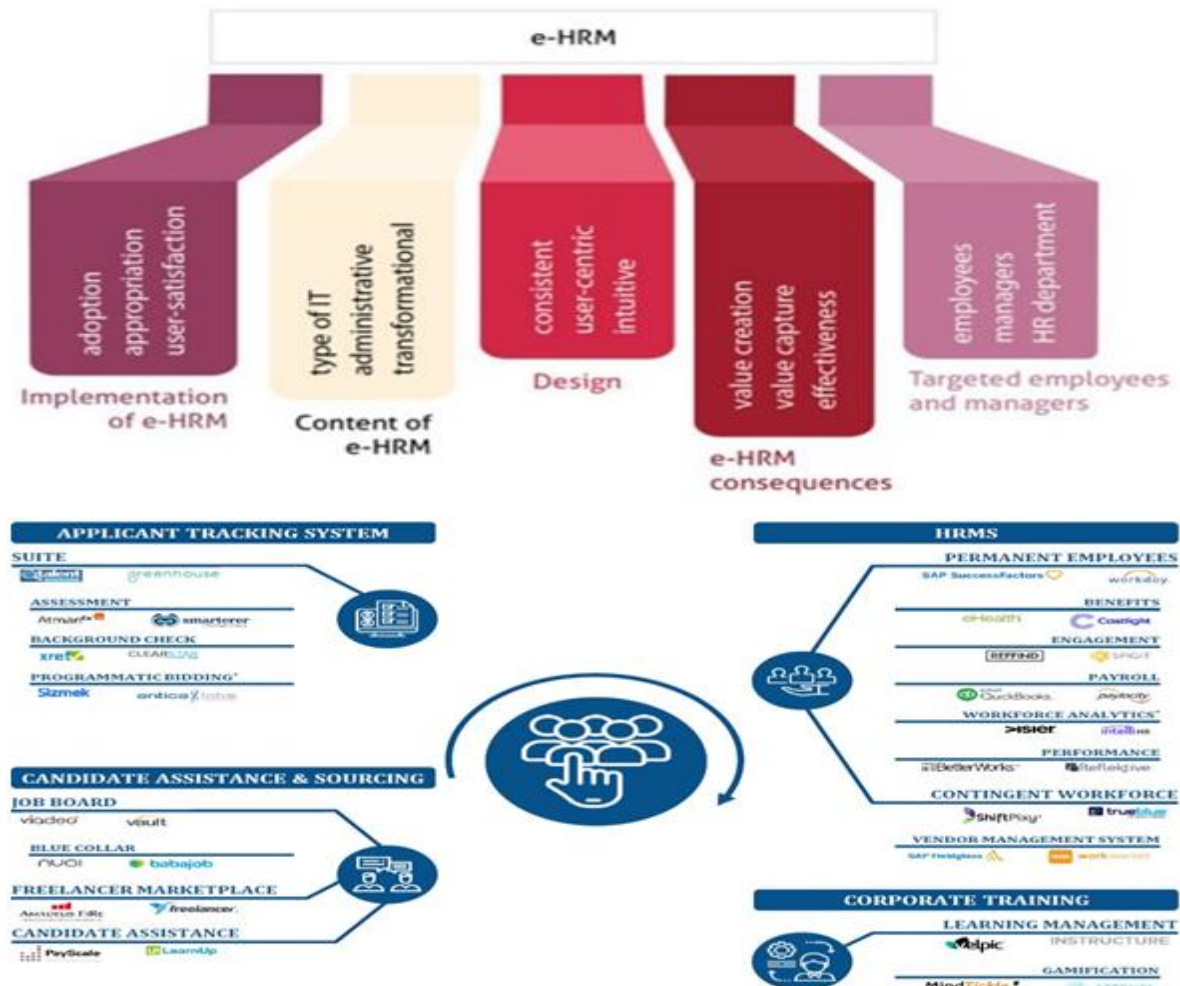
Technology and Human Resource Management are going to go hand-in-handand perform the following roles:

1. TECHNOLOGY AS AN ENABLER

The following are the activities that would be required to be conductednow post covid-19:

- Technology for HR Process Empowerment

- Use Case and Challenges

- ❖ Engagement

- ❖ Recruitment

- ❖ Training

2. TECHNOLOGY AS A DECISION MAKER

The following are the upcoming trends post covid-19 in this field:

- Algorithm Based Control

- People Analytics

3. TECHNOLOGY AS A SYSTEM

The activities conducted in this field have been forced to undergo a change post pandemic in the following avenues:

- Employee Interfaces

- Challenges

Some of the changes are exciting in their potential for transformation. In the appreciable future, HR will play a key role in redefining, perhaps permanently,the nature of the workplace.

For instance:

- ➢ Absence of standard attendance and

- ➢ Absence of leave policies

Organisations will have to place a higher degree of trust in the honesty and dedication of their workforce, especially since they are going to be working remotely. Work from home may affect the decision-making structures becauseof the constraints of video meeting platforms.

It would be suitable, if the size of the teams are not large enough since they maybe able to collaborate better and take decisions faster. In some ways, Work fromHome may even be a blessing in disguise.

Correspondingly, the visible benefits would be that since people are being ableto work from home, it may help people to balance professional and personal issues better. It may enable more women and people with disabilities to enter the workforce.

It will lead towards a situation wherein companies are having larger remote workforces and that will push organisations to ramp up technology adoption and digitalization, also enable dispersed operations, and collaborative functioning.

As organisations get more comfortable with employees working remotely, therequirement for office space and fixed workstations may reduce drastically.

Organisations may be able to leverage Work from Home concepts since it willhelp them to cut costs on real estate and brick-and-mortar infrastructure.

II) CONSUMER DURABLE SECTOR

Durables, also known as durable goods or consumer durables, is a category of consumer goods. They do not wear out quickly, and thereforedo not have to be purchased frequently. The reason for which they are known as "durable goods" because they tend to last for at least three years.

CATEGORIES OF CONSUMER DURABLES

a) CONSUMER ELECTRONICS

They are also known as "BROWN GOODS"

- Television sets
- Cd & dvd players
- Laptops
- Electronic
- Accessories
- Audio & video systems
- Personal computers
- Digital cameras
- Camcorders

b) CONSUMER APPLIANCES

They are also known as "WHITE GOODS"

- Air conditioners
- Washing machines
- Electric fans
- Microwave ovens
- Refrigerators
- Sewing machines
- Cleaning equipment
- Other domestic appliances

Changing Business Dynamics In The Consumer Durable Sector

i) _Period of 1980's and early 1990s Pre Liberalisation_

- ❖ Closed Economy
- ❖ Increased product availability
- ❖ Increased media penetration
- ❖ Advertising

ii) Period of Mid90s and Late 90s post liberalisation

- ❖ Liberalisation of markets.
- ❖ Influx of global players such as LG, Samsung, Sony etc.
- ❖ Shift in focus from promotion to product
- ❖ Innovation.
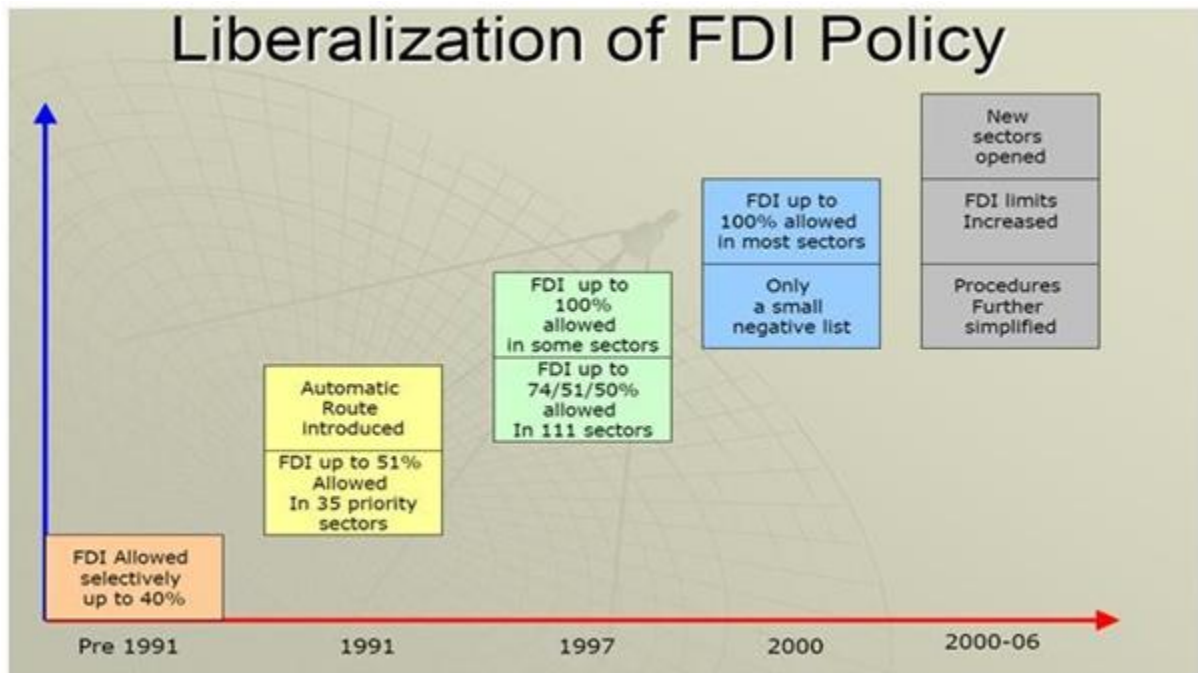
iii)   **Growth of Early 2000s**
➢ Increasing availability and affordability of consumer finance providedimpetus to growth.

➢ Low penetration of high-end products such as air conditioners (<1 percent)

iv)   **Consolidation of Late 2000s**
➢ Companies look to consolidate market share.

➢ Indian companies such as Videocon gaining global identity.

➢ Increasing penetration of high-end products such as air conditioners (>3per cent).

➢ Introduction of new aspirational products such as High Definition TVs(HDTVs)

➢ Companies targeting high growth in rural market.

v) **From 2017 Onwards**
• Goods and Services Tax introduced from July 2017, with mostelectronics goods taxed at 18 per cent.

i)   **In 2019, National Policy of Electronics 2019(NPE 2019) introduced.**

Sectors	Ministry/ Department	Approved financial outlay over a five-year period
Electronic/ Technology Products	Ministry of Electronics and Information Technology	Rs. 5,000 crore (US$ 674.92 million)
White Goods (ACs &	Department for Promotion of Industry and	Rs. 6,238 crore (US$ 842.03 million)

However, the impact of Covid-19 is clearly highlighted in the form of the following business dynamics, which are changing in the consumer durable sector.

❖ **Key Drivers for this increase include:**

➢ Rural Electrification

➢ More stable disposable incomes

➢ Work from home policies and

➢ Government's plans to offer production-linked incentives to establish manufacturing plants in India

❖ In order to truly thrive in the post-pandemic world especially with such a massive growth opportunity, the industry is required to keep a close watch on:

➢ Evolving consumer needs

➢ Product Innovation

Changing Business Dynamics w.r.t. "Trends likely to be witnessed during 2021"

➢ The need for innovating healthcare features within products

➢ Rising need for automation within products

➢ Affordability to play a major role

➢ Home grown products to gain traction

➢ Online vs offline to still hold true

i) The need for innovating healthcare features within products

➢ The pandemic has led individuals to focus on their health and safety first. That said, consumers are expected to be drawn to products that incorporate health related functionalities.

➢ Products with features such as anti-bacterial filters, UV solutions thateliminate viruses

ii) Rising need for automation within products

- During the lockdown, most people took up the responsibility of managingdaily household chores. There is a significant increase in the amount of time spent on household chores, eating into precious time that can rather be spent with family, or on self-development and professional activities. In the 'new normal', consumers will likely invest in automated, technologically superior products to ease their lives.

- Convenience led product categories such as :

1) Washing machines

2) Microwaves

3) Vacuum cleaners

4) Dishwashers will see a spike as people aim to become more self-reliant.

5) Domestic refrigerator segment with more space and deep freezers

6) Multiple cooling devices such as air conditioners/air coolers (Due toWork from Home concept)

7) Energy efficient products

iii) Affordability to play a major role

- The pandemic also led to job losses and pay cuts across industries and companies. Brands therefore, will have to focus on cost innovation within their R&D plans, to develop products that offer quality at an affordable price.

- In 2021, we expect consumers to continue to look at value for moneyproducts, which are need based, and not necessarily aspirational and niche; without sacrificing quality as a key aspect.

iv) Home grown products to gain attraction

- The government has been encouraging to

"Make in India" and it is expected that this movement will continue to gain further momentum.

- Indian brands should be self-reliant for the future, since consumers too have shown an affinity towards home grown products.

Considering all these factors, following are going to be the KEY PLAYERS

- Blue star, Daikin ,Godrej, Hitachi, LG, Onida, Philips, Samsung, Sony, Videocon

Whirlpool

Post Growing demand Covid-19, these are going to be the growth drivers

- Growing demand, Policy support, Increasing investment

CONCLUSION:
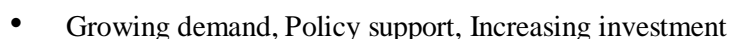
Social distancing caused the buying process to move online. The whole consumer buying process will continue to evolve, as consumers make greater use of internet, social media, online search and ecommerce touch points, leading to digitisation of the consumer decision making journey.

However, despite the increasing focus on going digital, there will always remain the need for touch and feel, when it comes to white goods. This is why the offline experience will remain the most important factor in decision making when it comes to consumer durables.

Hence, in 2021, while brands should focus in building their digital presence, there remains a need to strike a balance in the growth of their offline and online presence.

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EFFECT OF YOGIC INTERVENTION ON STRESS IN WORKING PROFESSIONALS: A CLINICAL STUDY

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ABSTRACT

Yoga, an ancient technique redefined by Patanjali, was earlier used by our ancestors to serve the best interests of mind, body and soul. However, recently it is used as an alternative therapy to solve health problems. A few medical practitioners even use it as a mainstream practice. Researchers have been exploring the possibility of adding it to mainstream in healthcare which is possible only with a clinical justification to prove its capabilities. It is believed to be helping patients reduce their stress levels and a clinical research was conducted to test the same. This paper discusses the potential of holistic practice of Ashtanga yoga (8 Limbs of Yoga) as per Patanjali's - Yoga sutra, in combating stress through exploration of clinical data.

Keywords: Stress, Yoga Sutra, Experimental design, Patanjali, Ashtanga Yoga.

I. INTRODUCTION (HEADING 1)

Yoga is an ancient technique used by our ancestors to serve the best interests of mind, body and soul. However, the awareness of its capability to solve health problems is relatively recent. It is used as an alternate therapy now across globe to defeat the diseases. A few medical practitioners also use yog sutra, a practice defined by Patanjali as a mainstream for curing diseases [1].

Need of the Study

Yoga is widely understood and is popular for its breathing techniques and body postures across the globe. Yoga in its truest sense is much more than simple breathing or body postures. The father of modern yoga, Maharishi Patanjali has documented the 8 fold path called Ashtanga Yoga or Holistic Yoga for balancing the mind and the body collectively. The holistic practice of yoga as per Patanjalis Yoga Sutra and clinical validation of the same was lacking in the research world. Researchers have been exploring the possibility of adding yoga sutra to mainstream in healthcare which demands justification. It is believed to be helping patients reduce their stress levels and thus, fight with many diseases caused by anxieties. However, to be able to truly prove its potential, a clinical investigation may be required. With this objective in mind the test the potential of Holistic practice of yoga through the teachings of Yoga Sutra as a remedy for stress, a clinical study was conducted that involves two groups of participants with one group given the exposure to 7 limbs of Yoga Sutra out of the 8 prescribed limbs in Ashtanga Yoga. The data from the two groups that were surveyed was used to make a comparison on their stress levels so it could be discovered if those using Yoga Sutra had lesser problems of stress.

I. Aims & Objectives

The aim of this study is to understand if holistic practice of yoga as per yoga sutras has the capability to reduce stress in people. The objectives of the study were

- To understand if practice as per yoga sutra has the capacity maintain acceptable levels of blood pressure.

- To understand if practice as per yoga sutra can have an impact on cortisol.

- To understand if adoption of the practice as per yoga sutra could affect values of brain wave patterns (EEG).

II. UNDERSTANDING STRESS

Stress is an internal response of the body to an external stimulus that could be a threat to a person in some way. When in stress, a person goes through three stages that are –

a) Alarm Reaction: Body takes an immediate action to control the stressor which could be a flight or fight. In this stage, the body secretes adrenaline to prepare one to deal with stress. A short-lived stress can be easily recovered from without any detrimental impact on body but if the exposure is long, the body can become vulnerable to ailments.

b) Resistance: In this stage, the body tries to restore a balance after stress to return to homeostatic state. If this stage lasts too long, it can affect a person's mental health causing problems like insomnia, sleep disturbance, and irritability.

c) Exhaustion: If the situation of stress goes on for too long, the body gets exhausted of utilizing most resources to cope with stress. And as a result, major effects start to appear on body health. Stress pushes the body to take more oxygen and the heart to pump more blood.

The presence of stress is often observed in the symptoms displayed by people that can be emotional, cognitive, behavioural, and physical. Agitation, depression and low self-esteem are some of the *emotional* symptoms of stress. *Cognitive* impacts could be forgetfulness, loss of concentration, pessimism, and poor judgement. *Behavioural* symptoms include overeating, nervousness, and alcoholism. *Physical* symptoms can be low energy, headache, diarrhoea, stomach upset, constipation, nausea, pains, aches, chest pain, frequent infection and more [4].

A nominal level of stress can be tackled but a prolonged exposure to a chronic stress can cause many disturbances in body and ailments like cardiac disease, a lung ailment, cancer, accidents, suicide, and cirrhosis of the liver. This is why

techniques for coping with stress have been studied by many researchers [5].

III. PRACTICE OF YOGA SUTRA

Yoga has been misunderstood by many as a physical activity. However, ancient practice of yoga has many forms that include not just physical exercises but also others as it is believed to work not just on body but also on mind and soul. Different yogic practices have evolved over the years such as Ashtanga yoga, hath yoga, raj yoga, bhakti yoga, karma yoga, Gyan yoga, and mantra yoga [6].

However, these have largely remained unorganized and scattered in their appearance till all the knowledge from different yoga related scriptures, Vedas and Upanishads were explored deeply to identify the eight limbs of Yoga Sutra by Patanjali that completes the whole. These limbs include yama, niyama, asana, pranayama, pratyahara, dharana, dhyana, and samadhi, adopted in the same sequence [6].

*a) Yama***:** It defines moral imperatives of non-violence or ahimsa, truthfulness or satya

b) Niyama: This limb suggests following good habits such as Body Purification or Shoucha, Contentment or Santosha, Austerity or Tapas, Study or Svadhyaya, and Devotion or Pranidhana.

c) Asana: The purpose of this limb is to calm ones body and mind using numerous relaxation postures

*d) Pranayama:*In this stage, one uses restraints on breathe by holding ones breathe to attain a high level of concentration for a prolonged time.

e) Pratyahara: In this stage, the person restraints ones sensory experiences of the outside world and draws attention inward [3].

f) Dharana: It involves use of mantras to hold focus of mind on one thing that could be place, tongue, breathe or navel which helps enhance concentration.

g) Dhyana: This is a state of meditation in which a person learns to focus ones mind on just one object and all the other thoughts are restrained [7].

h) Samadhi: This is the highest stage of meditation in which a person attained oneness in mind and is not distracted by anything.

The current research explored the impact of the first seven limbs of yoga sutra on stress faced by working professionals [2].

IV. MATERIALS & METHODS
A. Selection of cases

This study included two samples of 100 clinically diagnosed people. A clinical assessment of all these patients was done which involved recording of their vitals and measures of blood pressure, cortisol levels, and brain waves. The inclusion and exclusion criteria that were used for this study are as follows:

Inclusion Criteria: Individuals included were the working professionals who were facing occupation stress problems in their lives. The patients selected had mild problems of hypertension, anxiety issues or depression but no major health issue.

Exclusion Criteria: Patients below 18 years were excluded from the sample size. Also, the patients of major psychological disorders like epilepsy, depression, or schizophrenia were not included. Patients suffering from chronic illnesses and those having heavy dependency on drugs or alcohols were also excluded from the study.

Demographic Profile of Respondents

The table and the chart below presents the summary of the distribution of industries. Most of the respondents in the survey were from the banking industry followed by pharmaceuticals, Education, and Engineering.

Industry	Percentage	Industry	Percentage
Pharma	12	Real Estate	8
CG	6	Engineering	11
FMCG	8	Construction	5
Education	11	Finance	7
Service	2	Banking	15
Hospitality	4	Mfg	11
Total	50		50
Sum Total			100%
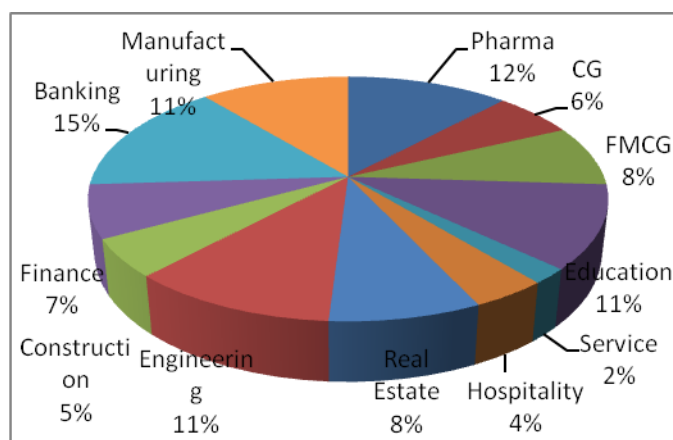
Gender	Respondents
Male	51
Female	49
Total	100
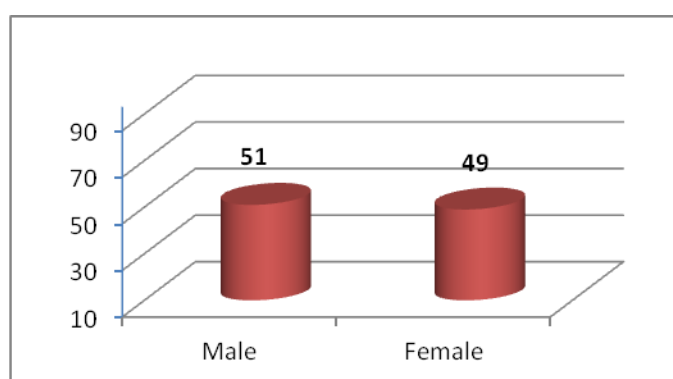
B. Pre-Treatment observations

The study used experimental research in which a survey was conducted on two groups of respondents with one given exposure to the practice of yoga sutra for one year. The survey was designed to collect data on their health condition, stress related factors, symptoms, and adoption of yogic practices. Each group had a sample size 100 respondents who included patients dealing with stress but did not suffer from any major ailments.

C. Treatment scheduling

Two groups of respondents with 100 sample size each were formed to take part in the experiment. The uncontrolled group was naturally observed for the duration of one year in which clinical observations and surveys were taken at the start of the study, six months into the study and after one year of observation. The second group, called controlled group for it was given a treatment of yoga sutra was also observed in the

same way but the yogic treatment was added to the observations with 3 limbs of yoga sutra practiced in first six months and remaining 4 during the next six months into the study.

D. Assessment Criteria

Correlation, regression tests, and T-tests were used to explore relations between demographics, clinical observations, self-observations, and yogic interventions. T-test was used to compare the changes in the patterns of clinical stress factors and symptoms of the two group to understand the differences in their patterns of stress over a year.

E. Subjective and Clinical Improvement

The respondents in the uncontrolled group saw stability or rise in the clinical conditions and symptoms of stress. The values of blood pressure, cortisol, and EEG values were discovered to be rising for most respondents over the year. However, the controlled group showed a significant improvement in the conditions of stress reflected by reduction in cortisol, blood pressure and EEG values over the year as well as disappearance of some of the symptoms for most respondents.

Four hypotheses statements were formed for performing inferential analysis including

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	pre_EEG - six_EEG	20.00000	1.95918	.19592	19.61126	20.38874	102.084	99	.000
Pair 2	six_EEG - Year_EEG	8.86000	1.53754	.15375	8.55492	9.16508	57.624	99	.000

Paired Samples Test – Controlled Group

H01: Demographic factors influence the stress levels in people

HA1: Demographic factors do not influence the stress levels in people

There was no significant correlation discovered between the demographic variables and stress variables suggesting that variations in the levels of stress between different demographic profiles could just be a coincidence and no clinical relationship can be justified.

H02: There is no significant increase in the stress levels in the absence of health intervention in the routine.

HA2: There is significant increase in the stress levels in the absence of health intervention in the routine.

A comparison was made between the conditions of the respondents over the year into the study using T-tests and it was discovered that the levels of stress increased over the year in the uncontrolled group but were either maintained or reduced in the controlled group.

H03: There is no significant increase in the EEG Frequency and stress levels in the absence of practice of yoga Sutra.

HA3: There is a significant increase in the EEG Frequency and stress levels in the absence of practice of yoga Sutra.

Paired Sample T Test with Levene's Test was used to compare the values of stress factors and symptom variables over the year into the study for both groups to determine if there was an increase in the frequency of brain waves in the absence of yogic intervention. It was discovered that when people are exposed to the practice of yoga, they tend to have a better control over the mental states as more people were observed to be in the ideal state after a year of study than at the start of the study.

Large t-values (102.084 & 57.624) in the below table suggests that the difference between the mean values of the two groups is big leaving a small probability for the mean difference to be occurring by chance. Further the positive sign suggests that mean values of EEG Frequency decreased over a period of last 6 months there by stating that the stress levels decreased.

H04: There is no significant impact in occupational stress reduction and its symptoms with practice of yoga sutra.

HA4: There is a significant impact in occupational stress reduction and its symptoms with practice of yoga sutra.

Cortisol is considered to be the primary stress hormone plays a very vital role in the human existence.

Independent Samples Test								
Group Statistics								
		Group	N	Mean	Std. Deviation	Std. Error Mean	Confidence Interval of the Difference	
Year_Cortisol_noon		Uncontrolled Group	100	12.74	1.85113	0.18511	er	Upper
Year_Cortiso		Controlled Group	100	4.73	1.83047	0.18305		
	assumed	30.768	198	0	8.01	0.26033	7.49662	8.52338
	Equal variances not assumed	30.768	197.975	0	8.01	0.26033	7.49662	8.52338

The Independent Sample T Test resulting in a Large t-value (30.768) and sig. Value 0.000 (< 0.05) suggests that the difference between the mean values of the two groups is big leaving a small probability for the mean difference to be occurring by chance.

T-test comparisons between the controlled and uncontrolled group revealed that the respondents of the uncontrolled group did consistently feel lack of energy, spike in weight and also found difficulty in coping with the day to day work. These stress symptoms however showed a significant decline in the controlled group respondents.

F. The Result

The regression testings and T Tests for the above hypothesis shows that a statistical conclusive evidence emanates from the sampled group that practice of yoga has a strong positive impact on Blood Pressure Levels, EEG patterns, cortisol levels and other symptoms of stress.

The statistical model inferences are fit to predict the future.

III. EFFECT OF YOGA SUTRA ON STRESS

Different limbs of yoga sutra offer different benefits for human health. Meditation can help reduce stress and anxiety which has been observed by many researchers. Smith (2007) reported that the practice of meditation was capable of reducing anxiety while James (2010) observed improvements in the moods of people who were exposed to the practice.

Human mind is responsible for creating all the moods, thoughts and feeling. It analysis the information received from the sensory organs and makes interpretations based on previously gathered intellect. The intelligence helps a person takes decision but often people struggle between alternatives causing conflicts preventing decision making. As per yoga science, human mind goes through five stages that include confused, puzzled, distracted, concentrated and controlled. Meditation can help a person move from confused state to controlled state by calming the mind [8].

The practice of holistic yoga through the Yoga Sutra has been long observed by Indian sages to have a positive impact on human health. It is used for calming one's mind and also work on body for positive impacts. Yoga can help create a balance between physical systems of the body and regulate ones metabolisms.

Mentally, it affects the five etiological factors that can have negative impacts on human psyche. These are ignorance or avidya, egoism or asmita, love or raga, hate or dwesha, and fear or abhinivesha. While it works to minimize the negative impacts of these factors, that are also called klesha, on human body, it also prescribes adoption of four Chitta Prasad methods, for positive impact, including friendliness or maitri, compassion or karuna, upeksha, and mudita [5].

Yoga Sutra has its impacts on individual body functions such as respiration, blood circulation, and brain wave functioning. The current research has used clinical procedures to observe each of these dimensions to assess the impact of yoga sutra on human stress.

A. Observations & Results
Some major findings were observed from the study and comparison of the two groups in the experimental study on the impact of holistic practice of yoga sutra on human stress. These were:

☐ Those living under stress are more likely to face the health issues.

☐ Over the time, stressful work causes a decline in the energy levels but with the practice of yoga sutra, the energy levels can be maintained.

☐ Stress in the life of working professionals has been observed to have negative impacts on body which is reflected through symptoms like reduction in energy levels in afternoon, weight gain, appearance of brain fog, sleeplessness, difficulty in early rising, cold problems, increased palpitations, and increase in anxiety

☐ It was found that people who practiced Yoga sutra were less tired from their jobs, had fewer allergic reactions, had reduced tendencies of feeling irritation and were calmer as compared to those who did not practice yoga.

☐ Working professionals from uncontrolled group were observed to show high tendency to deviate from the ideal state of mind during different conditions like awake, drowsiness, sleep and deep sleep which was controlled with the use of yoga sutra practice in controlled group.

B. Discussion
Millions of working professionals go through the conditions of stress that leads to major productivity losses. When stress is faced by any human, the body starts to use coping mechanisms to avoid or ignore it which can result into conditions like increase of the heart rate, respiratory issues, headaches, and upset stomach. The current study explored the impacts of stress on human body through observations of cortisol levels, blood pressure and symptoms of stress.

Yoga Sutra has been identified as a system for health building and an alternate therapy for treatment. However, the clinical evidences of its capabilities rarely exist and thus, this study was conducted to measure the impact of holistic practice of yoga as per yoga sutra on occupational stress through the experimentation and clinical study.

The observation of the uncontrolled group that was not exposed to the practice as per yoga sutra was found to be facing increase in the problems of stress while the controlled group that used yoga sutra as an intervention could feel a reduction in their stress levels over the year in the observation.

IV. CONCLUSIONS
Yoga Sutra is a practice long used for working on mind, body and soul by sages. It has also helped people in curing diseases and thus, has acted as alternative therapy for healthcare. However, the practice is still not absorbed in the mainstream because of the lack of evidence on its impact on human health. Thus, a research was conducted on 200 working professionals with half of them exposed to the practice of yoga sutra so that a comparison could be made between the two groups to assess the clinical impacts of practice of holistic yoga from the yoga sutras on human health. The patterns discovered in the controlled group revealed that yoga sutra has the capacity to influence human health and reduce stress in working professionals.

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PSEUDO-COLOR IMAGE PROCESSING: A REVIEW

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ABSTRACT

Pseudo-color image processing is a field of digital image processing used to enhance the hidden image features. Human visual system has limited capability to distinguish between the adjacent gray levels. If an image consists of 256 gray scale values, the human visual system cannot identify and distinguish between each of the gray scales. To overcome this limitation of gray scale images, pseudo-color image processing has come into picture. Color is an important property of an image that makes image components distinguishable from each other. Pseudo-color image processing is used for improving subjective quality of an image by replacing natural colors of an image with false colors and it can be used to assign a specific color to gray levels in a particular range based on specific criteria. Pseudo-color image processing can be used to highlight the features of interest in an image. Application areas of pseudo color image processing are medical imaging and satellite imaging. Aim of the review paper is to study the effect of pseudo-color processing on digital images.

Keywords: color image, color maps, gray scale, lookup table, Pseudo -color image processing

INTRODUCTION TO COLOR IMAGE PROCESSING

Color is considered as a powerful feature for identification of natural objects. Objects such as trees, fruits, and animals can be easily identified with their natural colors. Color can be treated as a tool for extracting specific objects from a background. Color image processing is categorized into two types, Pseudo-color Image Processing and full color Image Processing.

Introduction to Pseudo-color Image Processing

Pseudo color is also called a "False Color". Pseudo-color Image Processing is performed on gray scale images. Human visual system has limited capability to distinguish between the adjacent gray levels. If an image consists of 256 gray scale values, the Human visual system cannot identify each of the gray scales. To overcome this limitation, Pseudo color image processing has come into picture. Pseudo color image processing assigns a specific color to gray levels in a particular range based on specific criteria. This image processing technique can be used to highlight the feature of interest in an image. Pseudo-color processed images don't have natural object colors. For example fruit such as bananas may not appear yellow in color in pseudo color processed images. In a given figure 1, it is difficult to identify the shadows of the bananas. In Pseudo color processed image shadows are highlighted with blue color.
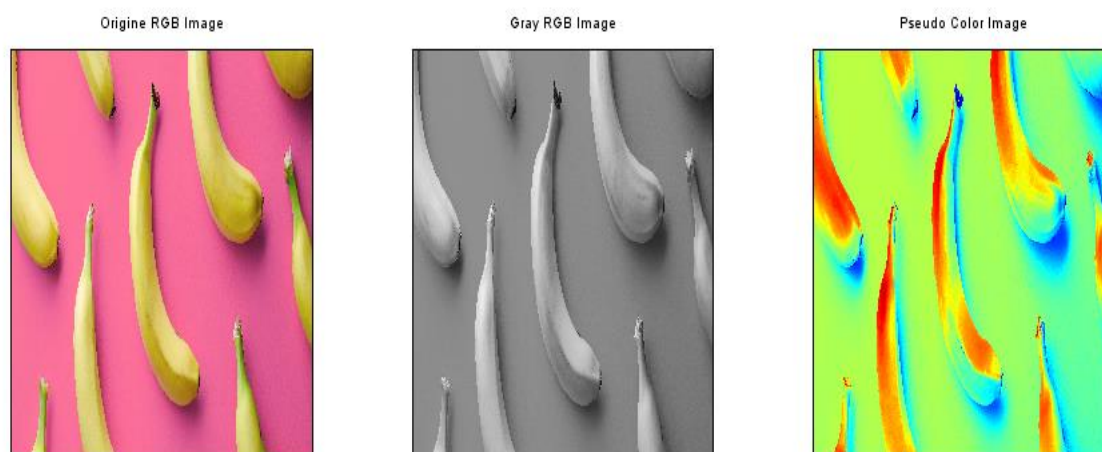
Figure 1

In this way, Pseudo-color image processing can be used to highlight the details hidden in a gray scale image, since human visual system has a good response for colors discrimination as compared to gray scales discrimination. In a given figure 2, the details on the surface of the moon are not visible due to the inability of the human visual system to discriminate between adjacent gray scales, whereas pseudo color processed images have made the hidden details visible. Hidden details on the surface of moon are highlighted with different colors in a Pseudo-color processed image. In this way pseudo color processing can be used to retrieve the features of interest from an image.
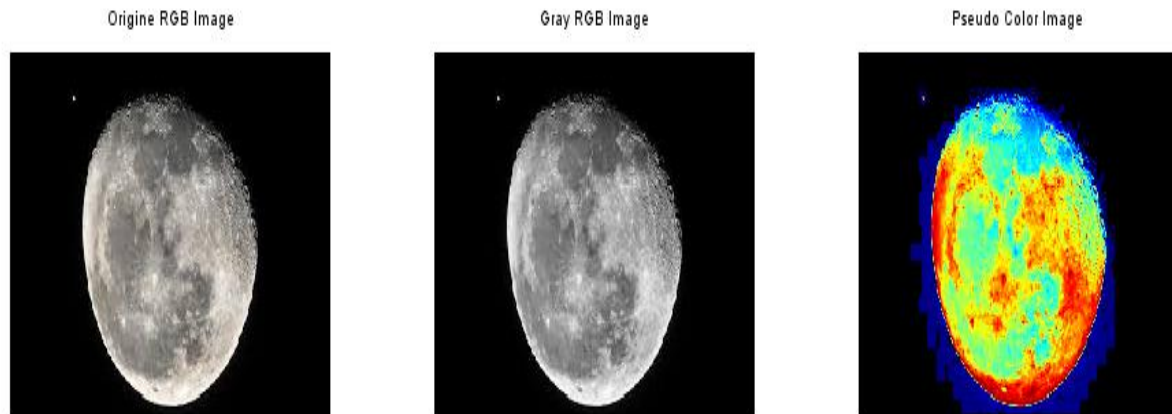
Figure 2

PSEUDO-COLOR LOOKUP TABLE

Pseudo-color processing technique involves the mapping of gray scale image into color image. An 8 bit pixel from gray scale images (256 gray scale values) is mapped to a 24 bit color pixel (8 bits Red + 8 bits Green + 8 bits Blue). This mapping is done via look up tables. Each of the gray level value is mapped to color value based on look up table. The size of pseudo color processed image increases by three times than gray scale image.

COLOR MAPS

The concept lookup table is implemented using color maps**.** Color maps are predefined color schemes used to map gray scale images into colored images based on specific criteria. Different types of color maps are bone, cool, copper, hot, spring, summer, gray, pink, HSV, jet, lines and autumn. Color maps enables to experiment with different types of color schemes. As shown in **Figure 3** autumn color map is used to map white pixels to yellow color pixels in an image.
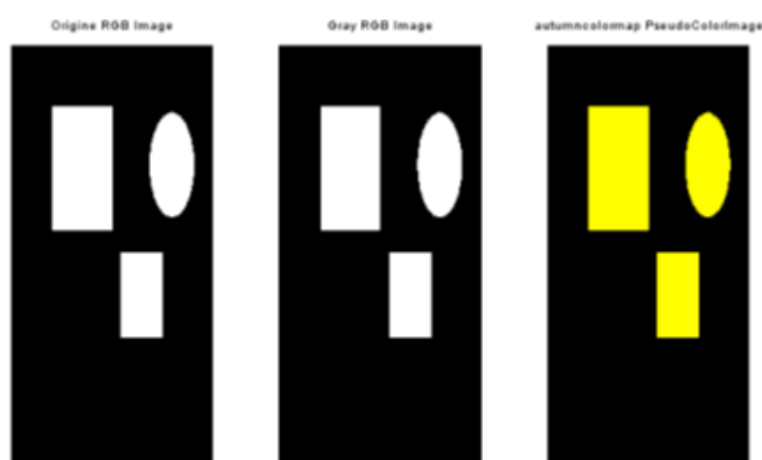
Figure 3

Pseudo-color image processing methods

Pseudo-color processing is performed using two methods, Intensity slicing and Gray level to color transformation.

INTENSITY SLICING

In intensity slicing technique gray levels in a particular range are mapped to a specific color. Assume that we have gray level values in the range from R0 to R255. Whereas R0 and R255 are minimum and maximum gray scale values respectively. Assume that we have performed intensity slicing in three groups as G1(R0 to R120),G2(R121 to R200) and G3(R201 to R255). We can assign False color COLOR1 to G1, COLOR2 to G2 and COLOR3 to G3 to create colored images from a gray scale image. This process is called "Multilevel Intensity Slicing", since gray levels are divided into multiple groups. Single gray level value selected as a threshold creates two types of groups of gray levels, G1(group with gray level values below threshold) and G2(group with gray level values above threshold). Pseudo-color images obtained using Intensity slicing technique has a limited range of colors.

GRAY LEVEL TO COLOR TRANSFORMATION

In gray level to color transformation, three independent transformation functions defined by color map are applied to gray scale images to get the processed RED, GREEN AND BLUE component of pseudo-color image. Intensity values of pixels from gray scale image are mapped to colored pixels in pseudo-color image through RED, GREEN, BLUE components of color map. Gray scale image pixel values are treated as an index values in color map mapping procedure. Pseudo-color image obtained using this technique characterized by variations of colors with different Hue and Saturation depending on transformation functions used.

APPLICATION AREAS

Pseudo-color images are used in medical imaging systems to enhance the details of images of human organs. Various imaging techniques used in medical imaging include X-ray images, ultrasound images, Magnetic Resonance Images; Computerized Axial Tomography generally produces gray scale images. To enhance the hidden features, such gray scale images are converted into Pseudo-color images. Black and white films can be converted into colored films using Pseudo-color image processing techniques. Satellite imaging system uses the pseudo-color processing to enhance the gray scale details.

CONCLUSION

Pseudo-color image processing is used to enhance the hidden image features, since colors convey more information from an image. Pseudo-color image processing can be done using two techniques Intensity slicing and Gray level to color transformation. Medical and satellite images are generally gray scale images that can be enhanced using Pseudo-color image processing techniques that improve the results of medical diagnosis and astronomical observations.

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SOCIO-ECONOMIC AND GEOPOLITICAL SPEED BREAKERS IN MANIPUR TO THE "ACT EAST POLICY" OF INDIA

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ABSTRACT

Manipur is considered as the gateway or the best feasible land route to the East of India in the quest to reach out to South East Asia and East Asia but the socio-economic and geopolitical snag will be a herculean task to achieve the desire end result. Ethnic Diversity and Ethnic Conflict, Economic Blockade and Bandh etc. are some of the socio-economic challenges. The problem of militant or insurgency, the use of Myanmar as a safe haven for militant hideout, the use of the Indo-Myanmar border for various militant activities and the role of China in it constitute another geopolitical threat. This paper attempts to articulate the socio-economic and geopolitical challenges in the success of the "Act East Policy" through the state of Manipur.

Terms: Ethnic Diversity, Ethnic Conflicts, Economic Blockade and Bandh, Militant and Insurgency, Indo-Myanmar Border, China, Act East Policy.

I. INTRODUCTION

The traditional periscope of India has always been to the west in its trade and commerce and political alliance. The direction of trade had always been towards the European Union, the United States and former Soviet Union Republic. With the disintegration of USSR, the end of cold war, the formation of the European Union, the emergence of Africa, the growth of South East Nations and above all the awakening of China "The Dragon", India "The Elephant" needed to redraw its commerce and geopolitical realignment.

India as one of the fastest growing economy in the world needed to flex its muscle through change of policies and bilateral, multilateral understanding and agreements. There is need to venture into new direction of geopolitical relationship to take advantage as well as to counter the challenges posed by the growing Chinese economy and designs. It was imperative for India to reach out to the South East Asian Nations and beyond to check the growing influence of China. To achieve this, Congress Government under Shri. P.V. Narasimha Rao launched the ambitious "Look East Policy" in 1991 along with the New Economic Policy which was rechristened by the BJP government under Shri. Narendra Modi in 2014 as "Act East Policy."

The government of India wish to hit two birds with one policy "Look East" or the "Act East". It is the objective of the government of India to bring about economic growth and development in the North Eastern region and accelerate National integration, and on a larger picture reach out to the South East Asian Nations and beyond to counter the growing influence of China and strengthen Indo-Pacific strategic relationship. There could be no better opportune time for India to reach out and relate as these nations too are looking for strategic partners with ability to counter the Chinese bullying in the geopolitics spectrum in South China Sea. It will also enhance the economic plans of India.

North Eastern Region (NER) of India is the most pivotal region in the fulfilment of the "Act East Policy" in view of its strategic geographical location. The region shared the International border with Bangladesh, Bhutan, Nepal, Myanmar and China and it serve as the most significant region to connect with the International market. India can reach the ASEAN countries through Myanmar from four (4) states of NER of India namely Manipur, Mizoram, Nagaland and Arunachal Pradesh.

The Tiny state of Manipur is a state with over 33 recognised tribes and communities and many other smaller groups. It is a state that is highly and sensitively divided on ethnic faultlines. It has the largest numbers of armed insurgent groups with diverse demands engaging in all sorts of activities under ethnic lines. But the historical demographic and geographical proximity makes the state the most viable land route to reach out to the South East Asian and beyond. It is not going to be a cakewalk with the given unstable geographical, economic, social and political narrative prevalent in Manipur. The hurdles in Manipur are complicated and numerous which is briefly examined in this paper.

II. Socio-Economic hurdles:

The state of Manipur geographically, socially, economically, and politically is divided into two sections of the valley and the hills (Haokip T.T, 2013). All through history, the relation between the hills and the valley had never been cordial even though some scholars seem to suggest that their ancestors were brothers. The British

Manipur was the valley and the control was over the Meitei Kingdom but the tribesmen of the hills were virtually left free and untouched. It was only to the interest of the British to protect the valley from the raids of the wild, savage tribesmen of the hills. This was one of the reasons why the wandering tribe (James Johnstone 1896) was settled between the hills and the valley (Banerjee M. & R.P. Attparia, 2003).

Manipur is demographically divided into two groups; the Non-tribals of the valley and the tribals of the hills. Manipur have 33 recognized ethnic groups and numerous sub-groups

(Shivananda, H, 2011).The Non-tribals are mostly Hindus and Muslims while the tribals are Christians and animists which has significantly contributed to the faultlines in the narrative of the affairs of the state. There were policies such as Inner Line permit by the British which was conveniently continued by the Independent India, The Land and Revenue Act 1960 compartmentalised the topography of the state (Hiamguanglung G, 2013).The policies of conferring Schedule Tribe to the people of the hills, the reservation policy did not go down well in the relation of the two communities as in the words of Lt. Col. Singh, L. L as cited by (Zeba, S, 2012) "ethnic divide between Meities and hill dweller of Manipur The people of the valley and the hills are of very distinct ethnic groups. Each ethnic group is very determined in protecting and preserving its cultural identity and territory The social divide has led to unending ethnic conflicts and violence.

This diversity of ethnics and communities in the tiny state has resulted in the perpetual conflicts and competition for all limited resources especially for the most valuable land resource. These conflicts are social, political and economic. There is huge "anti" inter-ethnic and intra-ethnic feelings and trust deficit among the communities and has become the breeding ground for ethnic conflict. Since the ethnic ties is so strong due to ethnic identity, belongingness, and security that land conflict between individuals or villages of different ethnic groups leads to ethnic conflicts and violence.

The vicious cycle of violence is ethnic centric "armed conflict in Manipur has thus been increasingly polarized along ethnic and tribal lines" (Singh, M. A, 2010). The ethnic conflicts in Manipur have been witnessed between the Nagas-Kuki (1992-1998), Kuki-Paite (1997-98), Tribals-Meitei, Meitei-Pangals (1993), Manipuris – the Migrant laborers (Siamkhum, Th, 2014). These violence and conflicts has left the state economically bleeding.

The strong affinity in ethnic lines has created the numerous insurgent groups. These groups has become a boon to its respective community but has created an environment of uncertainty, insecurity, and instability due to its various activities. The Government of India and Manipur had always treated the ethnic violence and insurgency issue in Manipur as a law and order problem. On a closer examination insurgency problem in Manipur is far beyond a law and order problem but surely an economic and political problem. The present state of insurgency problem in Manipur and the closely related ethnic conflicts and violence can be resolve effectively only if the core issue of land dispute is sorted out and resolved (Pamei, S, 2011).

Agriculture is the backbone of the economy. One of the greatest challenges facing the state of Manipur is the problem of the unending ethnic conflicts, and ethnic confrontations in the form of bandhs, strikes, and economic blockade. This in fact can be attributed as the single most important deterrent factor to the growth and development of the economy of Manipur in spite of its potential in terms of strategic location and resources. Manipur is beset with these Gandhian methods of demand or calling for attention to the grievances by an ethnic group directed towards another ethnic group or to the government (Singh, H.H, 2013).

It is of importance to note the settlement of different tribe along the two lifelines of Manipur in order to understand the importance and impact of these economic blockades to the state economy. The Nagas and the Kukis live all along the National Highways or the lifelines of the state: NH - 39, NH - 53 and NH - 150. These highways are core to the socio-economic relation and economic conditions in the state. Choking and blocking the Highway is a very effective way to pressurise the government; the economy suffocates and thus it gives every community in the state to take the opportunity to strangulate the economy. Thus we find that the economy of Manipur is virtually controlled by the competing tribes.

Economic blockade (introduced by the Japanese in 1943) and bandhs are used as a tool by all the tribes and communities to achieve their social, economic and political objectives and mileage. At time it is used as a tool by a community to counter a bandh or economic blockade by another ethnic group (Sharma,S.K, 2014). The state government due to its vote bank politics and ethnic oriented politics are at loss when such tools are imposed on the state as a pressure tactic. This method became a popular pressure tactic in the state since 1981 and ever since it has seen exponential increase. Different tribe and communities use these tools to pressurize rival communities or the government "Economic blockade, a means used by pressure groups/interest groups or

civil society to push through specific demand, is often experienced in India…. therefore, economic blockade is a fruitful means used in inter-intra relationships of ethnic groups and restoring the normal law and order situation (Singh, H.H, 2013)."

A case study of economic blockade and Bandh in Manipur called by different civil bodies in the year 2011 is shown in the Table 1 given below:

Table 1: Economic Blockade and Bandh in Manipur in the Year 2011

Groups Imposing Economic Blockade	Reasons	No. of Days
Kuki ethnic group (SHDDC)*	Demand for Sardar Hills District	92
Naga ethnic group (UNC)*	Counter to demand for Sardar Hills District	123
CSO* & UG*	Varied reasons	20
Total	-	235

Source: E-pao, Dec.31, 2011.

* SHDDC – Sardar Hills District Demand Committee

UNC- United Naga Council

CSO – Civil Societies Organisation

UG - Underground

Thus, the above table shows that in Manipur in the year 2011, there are a total of 235 days of economic blockade and Bandh call by the various ethnic groups. It is a sorrowful situation that out of 365 days of a year, 235 days were wasted by economic blockade and bandh in Manipur in the year 2011. The Economic blockade and bandh as a weapon of protest continue in Manipur even today.

With the current narrative of the situation in Manipur, it is an agrarian backward economy. There is hardly any large industry worthy of mentioning. Of course Manipur contributes significantly in the handloom industry of India but it is still a small cottage industry. The essential infrastructural facilities to attract investment and grow such as transport, roads, communication, power, education and banking are still very poorly developed.

The rampant, unpredictable ethnic conflicts and violence and the parallel government run by the ethnic centric insurgent groups have complicated the situation in Manipur. These dynamite explosive situation deters and drives out investment, brain drain of educated skilful individuals, less circulation of money due to low productivity, lack of capital and capital formation, lack of entrepreneurship etc is a cause of concern of the future and the successful implementation of policies and programs.

III. Geopolitical Hurdles

The success of Act East Policy through Manipur greatly depends on the political tranquillity of Manipur, proper regulation of unlawful trade activities in Moreh town, as well as how India developed relationship with Myanmar. It can be noted that Myanmar is the only gateway to ASEAN Countries through the state of Manipur via the border town called Moreh. In pursuing of Act East Policy, the Government of India takes up ambitious infrastructure projects namely the India-Myanmar-Thailand (IMT) Trilateral Highway project to connect ASEAN and other South East Asian countries through road and also Imphal-Mandalay Bus Service. India has even proposed extending the highway to Cambodia, Laos and Vietnam. The trilateral highway project starts from Moreh in Manipur, India to Mae Sot in Thailand through Myanmar. Thus Manipur become one of the most significant locations for the success of India's Act East Policy. But in spite of this geographical advantage, there are also geopolitical hurdles which will impede the success of AEP through Manipur. The geopolitical hurdle is studied in the context of militant's activities in the Indo-Myanmar border of Manipur and the role of China in it and the imperative of New Delhi to maintain a close relationship with Myanmar at any cost in the face of hostile neighbour China and Pakistan and at the same time controlling the militants activities in the Indo-Myanmar border of Manipur. If India fails, she will be at death's door.

In the first place, Manipur is a state with many insurgency groups operating in various jurisdictions. All the insurgency groups are ethnic base belonging to various ethnic groups, especially the three major ethnic groups – Meitei ethnic groups, Naga ethnic group and Kuki ethnic group. The state heard about the first rumblings of militant underground movement in the Naga inhabited areas of Manipur as early as the mid 1950's. Then it was

mainly an extension of the underground movement of the Nagas in the then Naga Hills and Tuensang area of Assam. Then the mid 1960's saw the emergence of the underground outfits of the Meeteis living in the valley like the United National Liberation (UNLF) in 1964, the Meitei State Committee (sometimes in 1966), the Revolutionary Government of Manipur (RGM) in 1968, etc. The Kuki insurgent group like the Kuki National Army (KNA) was formed in 1958 to address the social, economic and political interests of Kukis (Sharma, S.K. 2014). In this way, the insurgency groups began mushrooming in Manipur. Today, there are around Forty Two (42) ethnic insurgency groups in Manipur (Institute for Conflict Management, 2017)

Crossing the India border and setting up of the militant base or camp in Myanmar is not a new thing. It has its origin way back when the problem of insurgency began in the north east in 1950 and it is still continuing even today. Today, the Indo-Myanmar border has become a base or militant training camp. According to Security Agencies, there were over 50 (fifty) camps of Northeast insurgents in Myanmar till 2018. (PTI, 2016) As reported, the militants even received backing from the Myanmar army. In connection to this, a renowned journalist Mr. Rajeev Bhattacharyya had stated that the National Socialist Council of Nagaland (Khaplang) (NSCN-K) has come to an understanding and had a written agreement with the Myanmar army in 2001and the insurgent group had establish camp and training base in Myanmar. (Kumar, S, 2015) The NSCN (K) also formed an alliance with other insurgent groups of North east like ULFA, NDBF and UNLF having their camps in close proximity to each other. In addition, New Delhi official said that China is also helping Indian rebels with weapons and logistics including hideouts along the Indo-Myanmar border. (Sen, S. R, 2020) In this way, Myanmar has become a safe haven for the militant groups of Northeast in general and of Manipur militants in particular.

In addition to helping the Northeast militants including Manipur and creating a complex security issue to New Delhi, the settlement of the insurgent groups in the Indo-Myanmar border also creates lots of hassle in the trade along the Indo-Myanmar border. The trade hassle occurs in the form of extortion and taxes levied against the traders in the Indo-Myanmar border by the different militant groups. A spokesman of the transporter stated that about 20 (twenty) militant groups made such demands and they threatened that they would fire their vehicles and set them ablaze if their demand is not made. (Our Correspondent, 2008) Unable to bear all the demands of the militants, the transporters often had to suspend their trade and commerce.

Apart from extortion and tax, the insurgent groups in Manipur have been using the Indo-Myanmar route as a safe passage for procuring arms from the black market of South East Asia through Manipur. (Finnigan, C, 2019). It is said that Chinese manufactured weapons are believed to be crucial in sustaining the Northeast insurgencies. (Mahadevan, P, 2020).A senior intelligence official stated that around 80% of the seized or recovered weapons from the militants in the recent years have 'star' mark on them which means they were manufactured in China.(PTI, 2010). The weapons were smuggled via Myanmar in other part of Northeast India in general and Manipur in particular. China knew well that Myanmar is the only gateway for India to reach ASEAN countries and she also knew that India is having a hard time in solving the insurgency problem of the Northeast. China knew well that backing the militant groups of the Northeast in general and Manipur in particular will enhance the militant activities in India which in turn will destabilise the political integrity of India. Against this backdrop, the question is how far New Delhi can counter and control the militant's activities and China's role in the Indo-Myanmar border of Manipur and bring conducive and secure environment in the Indo-Myanmar border for the success of AEP.

Finally, as Pakistan has totally cut off India from West and Central Asian markets and failure on the part of both India and China to improve their relationship, it has become imperative for New Delhi to maintain a close relationship with Myanmar at any cost. New Delhi at any cost has to maintain a good relationship with Myanmar without considering much about military juntas or democratic rule in Myanmar if only she want to reach the ASEAN market. Myanmar plays a very important role in the success of AEP and thus Manipur as well. The unstable political shift in Myanmar from military to democracy and democracy to military will serve as a great challenge for New Delhi. Keeping aside her favour of strong and stable democratic rule in Myanmar, New Delhi should come out with a policy to deal with the military juntas if only she want to achieve the objectives of AEP and serve her national interest. The maintenance of cordial relationship with Myanmar should go along with addressing the political issues of Manipur, if not AEP will only enhance the militant activities of the northeast including Manipur and it will remain a stumbling block to the fulfilment of the national interest of India.

IV. CONCLUSION

These socio-economic and geopolitical shortcomings will surely be an obstacle in the success of the Act East Policy in using Manipur as the transit or the Gateway to reach out to South East Asian countries and the East

Asian countries. The absence of peace, economic backwardness and the presence of rampant social and political unrests causing instability and insecurity are bottlenecks that the Government of India and Manipur need to sincerely addressed taking into consideration the socio-economic and political grievances of the people of the state rather than approaching with one size fits all policy. Failure to first address these socio-economic and political bottlenecks will result in abysmal failure of the Act East policy or will be a mountain to climb out of a molehill.

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MANUSCRIPT SUBMISSION

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1. Manuscripts should be submitted preferably through email and the research article / paper should preferably not exceed 8 – 10 pages in all.

2. Book review must contain the name of the author and the book reviewed, the place of publication and publisher, date of publication, number of pages and price.

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5. The abstract should summarize the context, content and conclusions of the paper in less than 350 words in 12 points italic Times New Roman. The abstract should have about five key words in alphabetical order separated by comma of 12 points italic Times New Roman.

6. Figures and tables should be centered, separately numbered, self explained. Please note that table titles must be above the table and sources of data should be mentioned below the table. The authors should ensure that tables and figures are referred to from the main text.

EXAMPLES OF REFERENCES

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- **Single author journal article:**

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Bateson, C. D.,(2006), 'Doing Business after the Fall: The Virtue of Moral Hypocrisy', Journal of Business Ethics, 66: 321 – 335

- **Multiple author journal article:**

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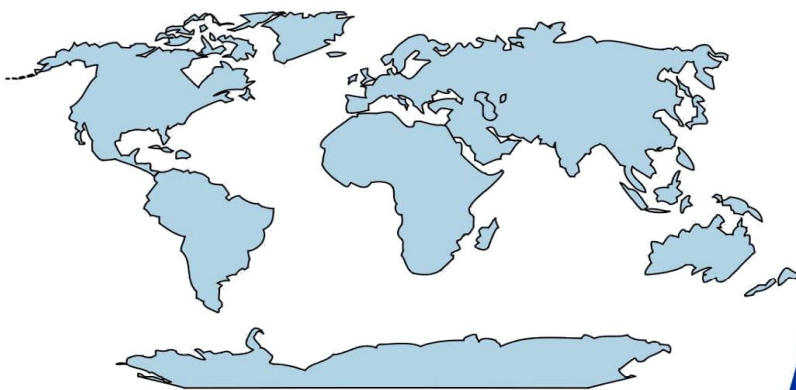
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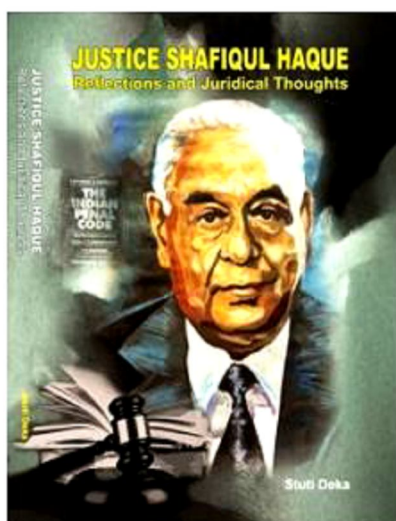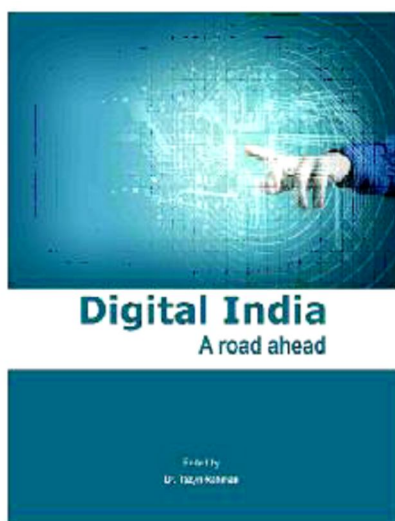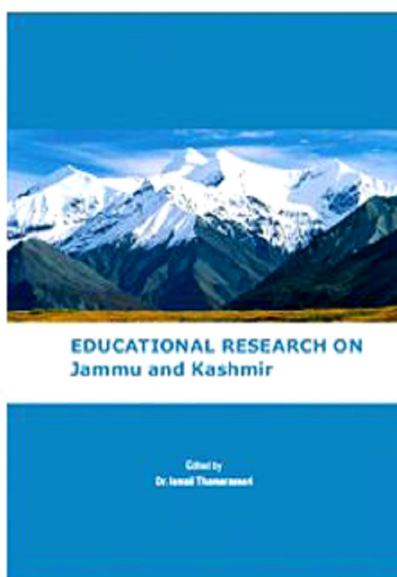
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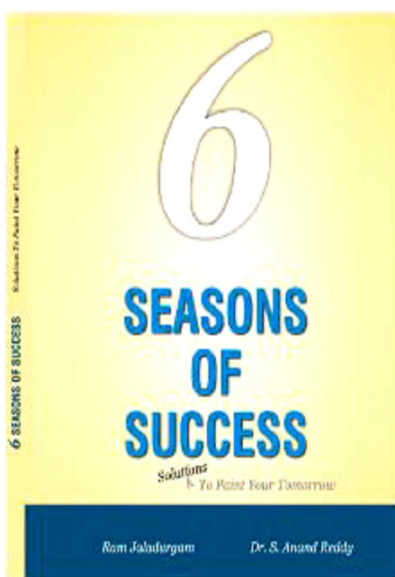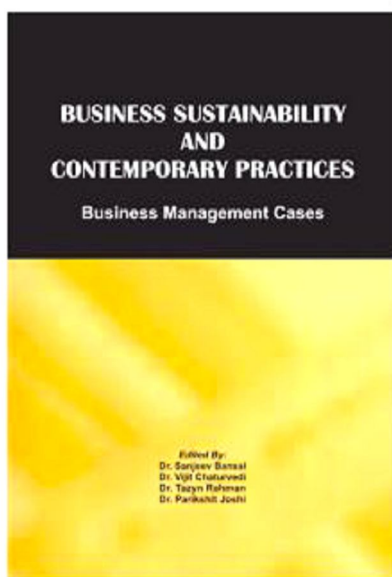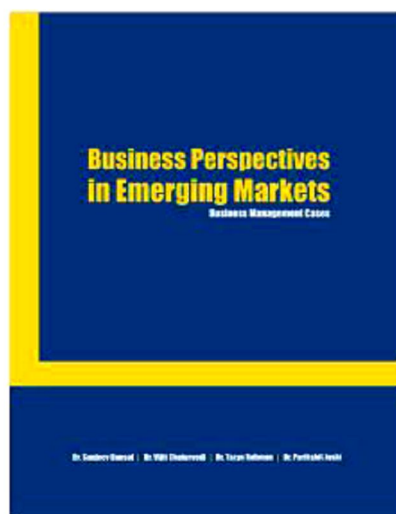
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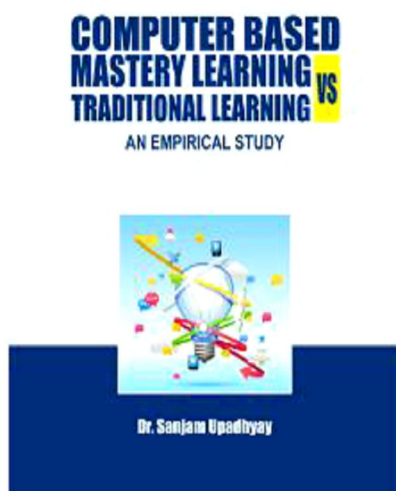
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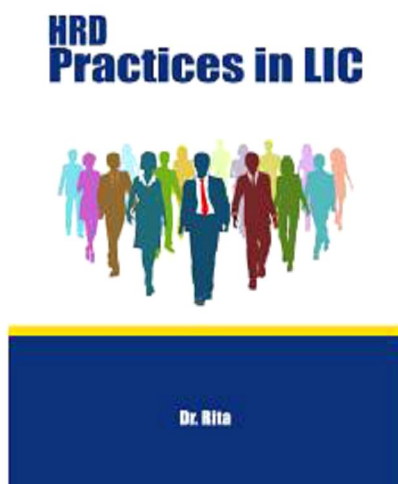
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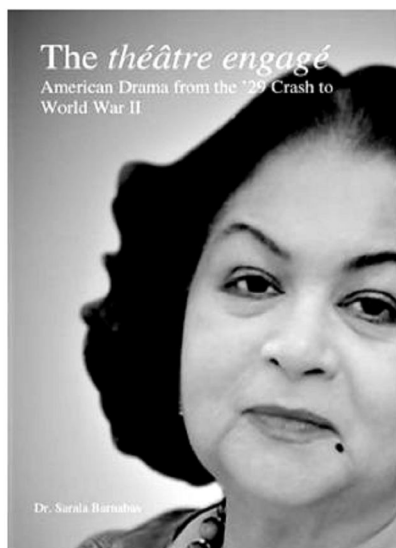
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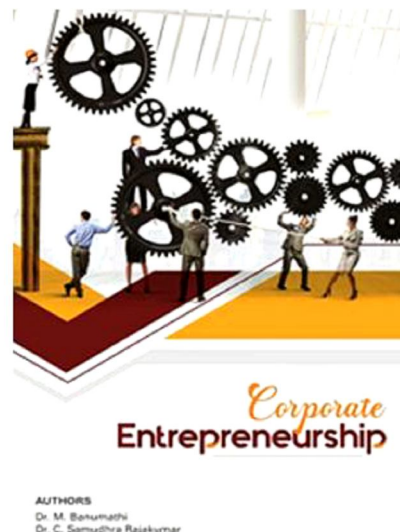
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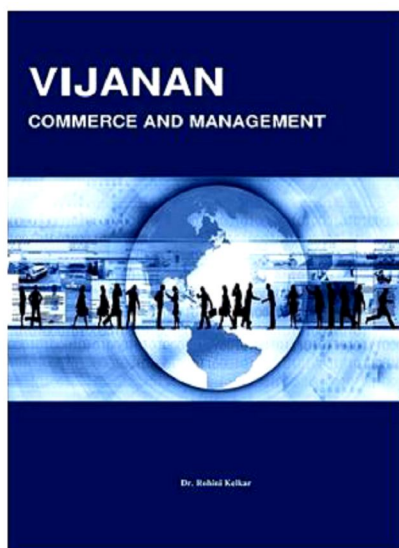
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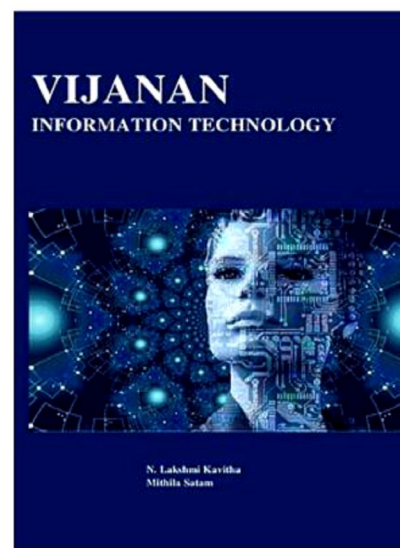
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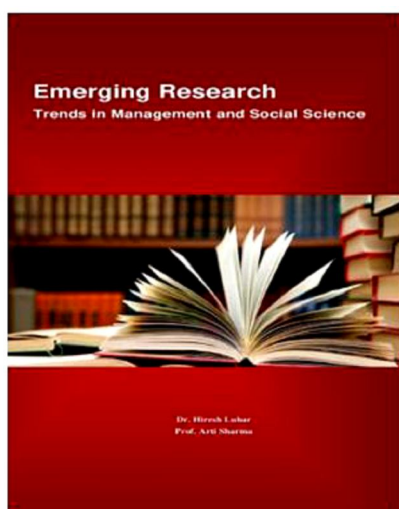
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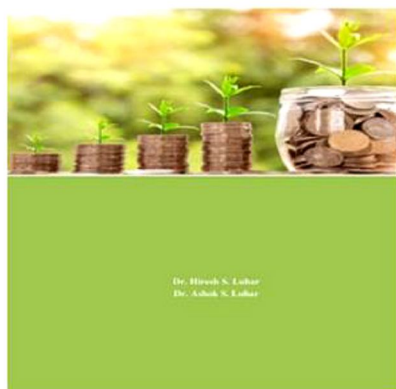
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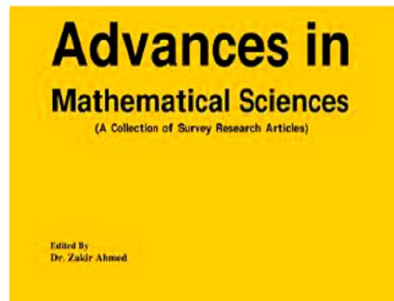
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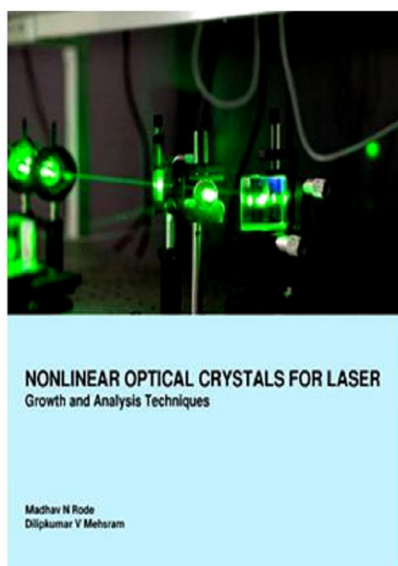
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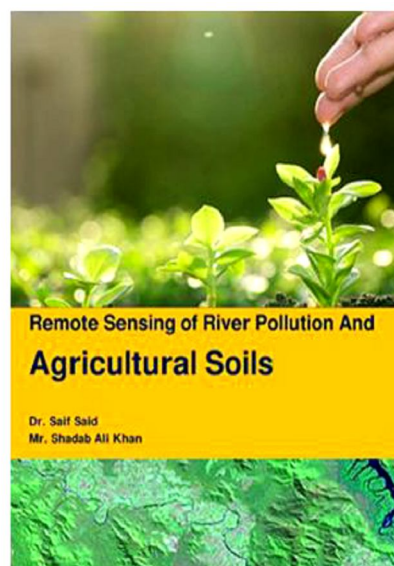
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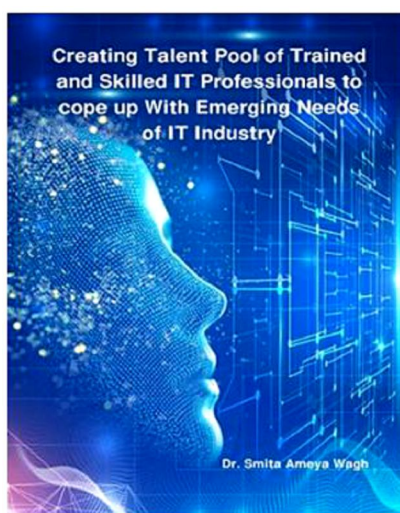
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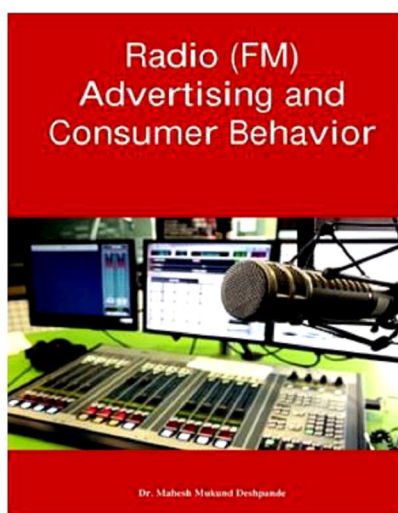
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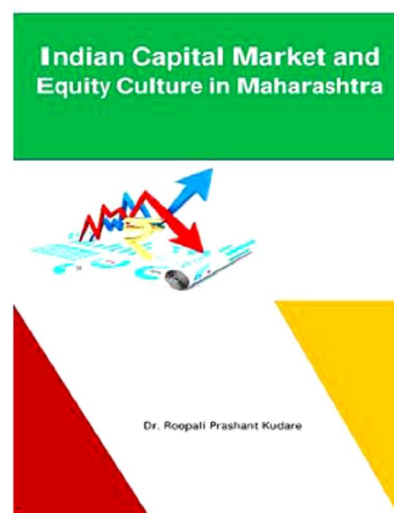
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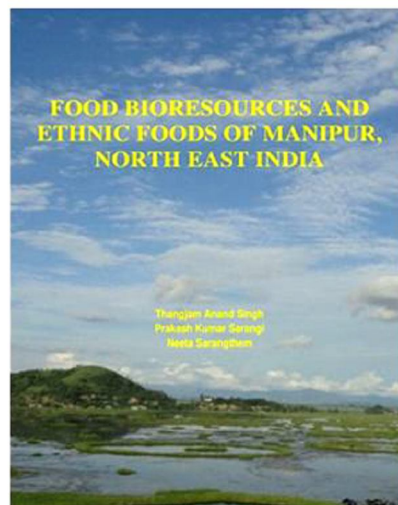
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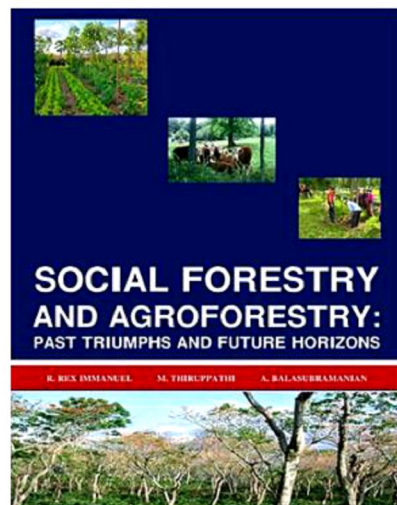
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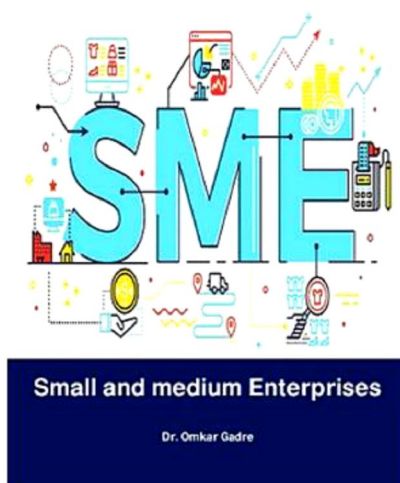
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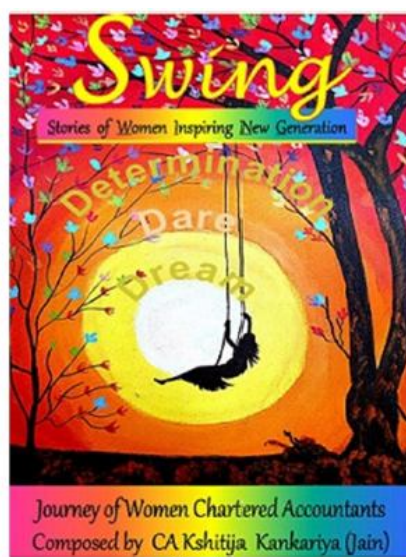
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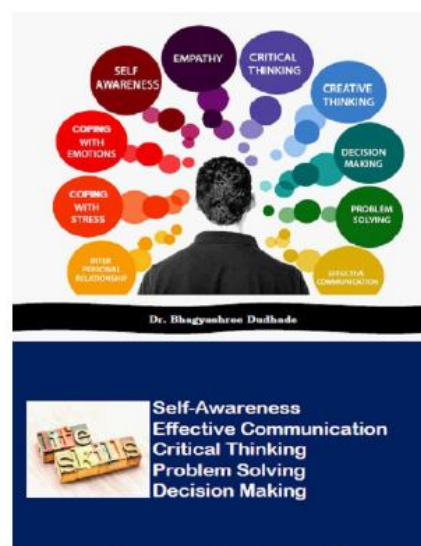
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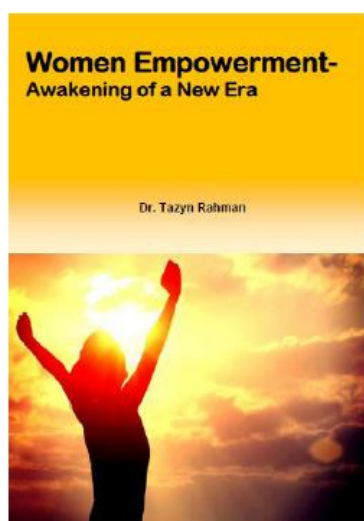
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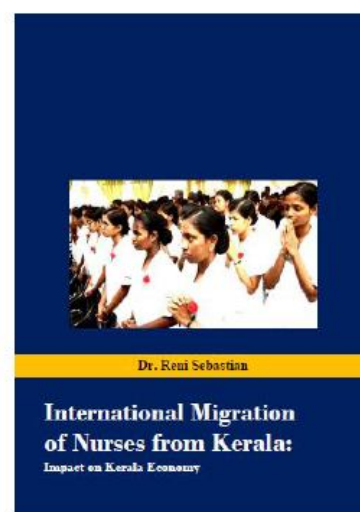
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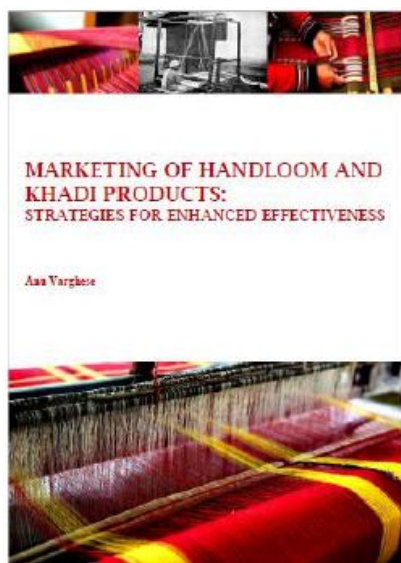Impact on Kerala Economy

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