

Editorial

Yoga Revolution-The way to world peace

After announcing the world yoga day by UNO, yoga has been accepted worldwide as one of the holistic way of life. India, the pioneer of yoga for spiritual, mental and physical health has created the path of peace also. In ancient India yoga was taught by the saint like Patanjali. In medieval period the vaishnava saint like Srimanta Sankaradeva(Assam) practised yoga for good health. Sankaradeva gained so health physic that he could swim the river Brahmaputra from one side to other at the time of monsoon. He also faught against wild Buffalo by the physical strength gained by yoga. Lord Krishna is regarded as the master of yoga who taught yoga to Arjuna which conceptualised 'Gita' where cream of the Indian philosophy reflected. The traditional of yoga was continued through Vedic culture till then. In 20th century it has again started to flourish, as because the side affects of modern medicine and pollution have created new hazards for human health and mind. Yoga can cure diseases without any medicine. It not only makes good heath and mind, but also good character. It is an education in toto for total personality development which makes a man wise and gentle. After realizing its fruitfulness, the people of many countries adopted it as their way of life. Last 21st June was celebrated as world yoga day in 177 countries. The sports and fitness industry association of America reported that in America 5.2% growth of yoga practice is seen in the recent years, which is more than the other health related activities. About 25 million American citizen practicing yoga and of which 76% are women. There are 669 yoga centers in greater Toronto area of Canada. In England thousand of yoga teachers running 20,000 to 30,000 yoga classes in every week. The countries like China, Singapore, Thailand, etc, observed the first World yoga day with a great zeal. In China a yoga college also inaugurated in Unnan Minzu university in Mumming city on 13th June, 2015. The Prime Minister of Thailand attended in the world yoga in Singapore with 4,000 people. By creating healthy body and mind of the world masses yoga has opened up the way to world peace. A real yogee cannot do un-social or inhuman activity. The teaching through yoga to new generation may create a society with best ethical values, which is the foundation for social justice and peace. If all the countries of the world come together for such high education of yoga, the un-social elements will be gradually abolished and we may have the world of permanent peace and happiness.

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Distribution of Nitrate (NO_3^-) in the ground water and surface water of coal mining areas of Assam (India)

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Abstract:

The distribution of Nitrate (NO_3^-) content in various water bodies from the coal mining areas of Assam in the north-eastern part of India has been reported in this work. Water from ponds, wells and rivers of the area was systematically investigated to determine the concentration of Nitrate in the dry and the monsoon season. The values were found in the ranges of 1.2 – 213.5 mg/L, 11 – 70 mg/L and 3.5 – 211.5 mg/L considering the two seasons in pond water, ground water and river water respectively. The highest values of nitrate were found in that water sources where the pH values were lowest and the pH values were 2.6, 4.6 and 2.6 in pond water, ground water and river water respectively. Only in five numbers of sites out of the thirty, nitrate concentration exceeded the acceptable limit (45 mg/L) recommended by WHO for drinking water. The results are discussed in the light of possible adverse effects.

Keywords: Coal mining, Acid Mine Drainage, groundwater, pond water, river water, Nitrate.

Introduction:

The coal mining areas of Assam (North East India) are located in the Borail range extending from northeast to southwest direction in the districts of Dibrugarh and Tinsukia and the coal belong to Oligocene tertiary variety. Two important coalfields present in the area are Dilli-Jaipur and Makum coal fields. Coal mining generates two major wastes Acid Mine Drainage (AMD) and Coal Washeries. In coal mining explosives are often used to blast the coal in the mines. Thus from explosives Nitrates originate in the mining areas. It is found in pit water or waste rock from spilled or undetonated explosives or by leaching under wet blast condition. Nitrogen ion factors for explosives are normally between 1-6 %, nitrate account for about 85% of the total nitrogen released in mine drainage while ammonia accounts for the rest (Sobolewsky, 1998). Nitrate may also enter the water bodies from the fertilizers used for agricultural purposes.

Nitrate (NO_3^-) generally present in trace amount in surface water, but may be high amount in ground water. In low concentration it is not hazardous but if its concentration is more than 45 mg/L it is hazardous to human health. It is very dangerous to infant causing methemoglobinemia or blue baby syndrome (De A.K, 2012).

Methods and methodology:

Water samples were collected from the coal belt in two seasons, viz, post monsoon (Batch A), and monsoon (Batch B) season for three years from 30 different sources. Samples were collected in pre-cleaned plastic bottles of 1 litre capacity. The sampling sources were divided into three categories, pond water (10 samples), ground water (10 samples) and river water (10 samples). The sampling sources and their approximate locations are given in Table 1.

Sample collection, filtration, treatment, digestion and analysis for dissolved metals were carried out following standard procedure (APHA, 1998). High purity reagents obtained from E. Mark (India) were only used. Double distilled deionized water and borosil glassware were used throughout the study. The estimation of Nitrate was done by Spectrophotometric method using a Spectrophotometer (Hitachi 3210). Measurement of UV absorption at 220 nm enables rapid determination of NO_3^- ion. Dissolved organic matter also absorbs at 220 and 275 nm, but NO_3^- ion does not absorb at 275 nm. The second measurement made at 275 nm is thus used to correct NO_3^- ion value.

Here water samples were prepared by adding 1 N HCl in 25:1 ratio. The absorbance against D/W as blank was taken and the reading were taken at 2, 3 wavelength program at $W1 = 220 \text{ nm}$ ($\text{NO}_3^- + \text{Organic matter}$) and $W2 = 275 \text{ nm}$ (Organic matter)

$$\text{Now, } \text{NO}_3^- \text{ (mg/L)} = W1 - 2W2.$$

Results and discussion:

Nitrate content of the water sample from different locations for the study area is shown in Table 2. No uniform distribution of Nitrate content was found among the sampling stations. In ground water and river water Nitrate content was found more in dry season than monsoon due to the dilution effect in monsoon. But in pond water, many stations contain more Nitrates in monsoon season this may be due to the entry of Nitrate along with rain water. Considering the two seasons in pond water, ground water and river water respectively

the values were found in the ranges of 1.2 – 213.5 mg/L, 11 – 70 mg/L and 3.5 – 211.5 mg/L. Considering the average values the ranges are 2.3 – 198.5 mg/L, 15 – 67.7 mg/L and 4.2 – 204.4 mg/L respectively. The highest values of nitrate were found in that water sources where the pH values were lowest and the pH values were 2.6(P4), 4.6(G4) and 2.6(R5) in pond water, ground water and river water respectively.

Table 1: The sampling stations for water (Distance and direction are measured with reference to Coal India Limited's residential complex at Margherita)

S.N	Locations	Sources	Distance (km)	Direction
Ground water				
G1	CIL Complex, Srimanta Nagar	Tube well	0	--
G2	Polo field at D duara's residence	Tube well	1	S
G3	At CMPF Office CIL	Tube well	1	W
G4	Near Sarbajanin Kali Mandir	Dug well	20	E
G5	Lalpahar Village, Tipong	Dug well	19	E
G6	No. 2 Tirap Gate	Tube well	18	E
G7	Lekhapani Shiva Temple, Tinali	Dug well	15	S
G8	Lido Itakhola near a bridge	Dug well	9	E
G9	Ledu Bazaar, Barua's Hotel	Tube well	7	E
G10	At the Stadium, Tikok Colliery	Tube well	5	E
Pond water				
P1	Shiva Mandir, Tipong	Pond	20	E
P2	Lalpani Village, Tipong	Pond	19	S
P3	No. 2 Tirap Gate	Pond	18	S

P4	Tirap Colliery, a road side pond	Pond	12	E
P5	Ledo Itakhula, near a bridge	Pond	9	E
P6	Ledo	Pond	8	E
P7	Patkai Stadium	Pond	7	E
P8	Ledu Bazaar	Pond	6	E
P9	Borgolai area	Pond	4	E
P10	Changlang Road, Margherita	Pond	3	N
River water				
R1	Tipong River, Colliery Gate	River	22	E
R2	GE Office under airon bridge	Rivulet	16	E
R3	Lekhapani River, Lekhapani Station	River	15	E
R4	Lekhapani Station, ASEB office	River	14	E
R5	Shiva Mandir, Tirap colliery	Rivulet	11	E
R6	Tirap Colliery near a bridge	Rivulet	10	E
R7	Tikak Colliery under a bridge	Rivulet	5	E
R8	New colony near a bridge	River	2	E
R9	Back side of Borgolai	River	4	E
R10	Margherita	River	3	W

From the data it is shown that only in five numbers of stations Nitrate content exceeded the drinking water guideline value of 45 mg/L recommended by W.H.O (1984). Therefore the water from these sources is very dangerous to infant as it may cause methemoglobinemia or blue baby syndrome. Out of thirty sampling stations twenty five

stations have Nitrate content less than the guideline value recommended by W.H.O. and are not hazardous to human health.

Nitrate (NO_3^-) generally present in trace amount in surface water, but may be high amount in ground water. But in the present study Nitrate (NO_3^-) was almost equally distributed in surface and ground water. Comparing the Nitrate content (4.24- 46 mg/L) in the drinking water in and around the mines in Keonjhar District of Orissa, more amount of Nitrate is present in the water from the present study area of Assam.

The variation of the average nitrate content in the different types of water samples from the study area with respect to the WHO (1984) guideline value is shown in Fig.1

Table 2: Nitrate content (mg/L) of water from the study area (A and B represent the mean of post-monsoon and monsoon results from the three years measurements in each case)

SN	Pond water			Ground water			River water		
	A	B	Mean	A	B	Mean	A	B	Mean
1	30.5	20.5	25.5	27.0	20.0	23.5	4.3	4.2	4.2
2	17.3	13.6	15.45	13.0	18.0	15.5	5.1	3.7	4.4
3	8.9	8.6	8.75	19.0	11.0	15.0	10.4	8.1	9.3
4	183.5	213.5	198.5	70.0	65.3	67.7	15.5	11.3	13.4
5	128.0	197.6	162.8	21.0	15.0	18.0	197.2	211.5	204.4
6	9.1	31.3	20.2	17.3	12.0	14.7	131.4	91.3	111.4
7	11.3	33.0	22.2	28.5	18.0	23.3	23.3	41.3	32.3
8	3.2	16.1	9.7	45.0	36.0	40.5	15.0	12.8	13.9
9	1.2	3.3	2.3	16.7	27.0	21.9	9.8	19.1	14.5
10	11.0	10.9	11.0	23.6	15.0	19.3	7.1	3.5	5.3
Min	1.2	3.3	2.3	13	11.0	15.0	4.3	3.5	4.2
Max	183.5	213.5	198.5	70	65.3	67.7	197.2	211.5	204.4
SD	62.7	80.1	53.2	17.2	16.4	11.3	66.9	65.8	46.6

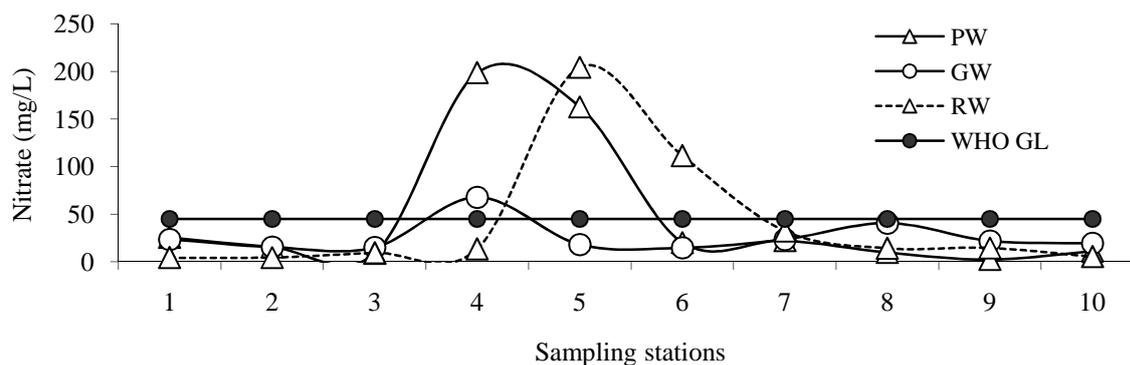


Fig. 1: Variation of the average nitrate content of the pond water (PW), ground water (GW), and river water (RW) along with the WHO guideline value

Conclusion:

From the above study, it may be concluded that only five numbers of water samples are polluted by Nitrate with concentration more than 45 mg/L recommended by WHO for drinking water. Water from the above samples cannot be used for drinking. In all the types of water samples the highest concentration of Nitrate are found in that sites where the pH values are lowest. The high value of Nitrate may be due to the entry of acid mine drainage from the coal mining activities.

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Sustainable development in the third World through Micro Finance

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ABSTRACT:

The human civilization is the story of development and progress in the all fields. However, conscious minds of the world are aiming with despair that in the name of material development, the so called civilized people are engaged in preparing the graveyard of the entire human race by destroying the environment. We need industrialization and economic development, but not at the cost of human lives. Thus it is clear we need such a way for development which is based on the balanced growth of our economy. Micro-finance may be a solution to the problems that arise with development. The concept of micro-finance is based on the sound and balanced growth of our economy. It is eco-friendly and based on pro-poor policy. The great success story of Prof. Muhammad Yunus through the Grameen Bank in Bangladesh obviously comes in this respect. Our government at the centre has been implementing so many schemes through the different Five Year Planning to encourage the micro-finance programs. This article discusses the relevance and importance of micro-financing is our sustainable development and how it is to play vital role in the better future in the third world countries.

KEY WORD: Micro-finance, eco-friendly, sustainable development, industrialization, environment.

INTRODUCTION:

The concept of sustainable development has got universal acceptance and importance in the recent times across the globe. The human civilization is the story of development and progress in all the sectors including economy. However the conscious minds of the world are aiming with despair that in the name of material development, the so-called civilized people are engaged in preparing the graveyard of the entire human race by destroying our environment and thus leaving a problematic and hopeless world for our posterity. We need industrialization and economic development, but not at the cost of human lives and hopes of our future generation. Micro-finance system may be a solution to these sorts of problems, since it is based on balanced growth of our economic progress. The concept of micro-finance

system is new hope for the underdeveloped and developing countries of the world as it provides us the right way of development without creating problem in future.

MUHAMMAD YUNUS: PIONEER OF MICRO FINANCE

Dr. Muhammad Yunus established the Grameen Bank in 1983 in Bangladesh, with the goal of assisting the disadvantaged by providing deposit and micro-finance services for individual customers and groups. The bank promotes the concept of savings which reduces the reliance on outside funds. It also offers micro-finance through group loans, which not only abolishes the need for collateral, but also reduces costs. The bank has experienced a high savings rate and an excellent recovery rate for loans. Grameen Bank's recovery rate of 90% of which 94% of loans made to women is high compared to that of the Bangladesh National Bank, which only recovers 25% of its loans. Grameen Bank's innovative design, open door loan Policy, commitment to gender equality and its poverty alleviation potential has attracted interest from governments and international assistance agencies throughout the world. The Grameen Bank model is now being used as a reference in planning micro-finance programs in other countries.

We all learn that Dr. Yunus has been able to bring remarkable change to the underdevelopment economy of Bangladesh. His concept of micro financing to the poor, especially the poor and downtrodden women has brought economic and social change to the troublesome Bangladesh by alleviating poverty, empowering the women. It helps a lot in the enhancement of confidence level of the women folk of the country. Needless to say, Dr. Yunus has not advocated the establishment of any large scale industry, nor has he appealed for foreign investment for developing his country. He has tried to provide small loans in nontraditional economic sectors. Flexible repayment procedures and reasonable interest rates are features of his micro-finance system. Prof. Yunus has proved that a small amount of money can contribute significantly to poverty alleviation as attested to by the many successes, particularly amongst women in villages and remote areas. Thus, Muhammad Yunus has been able to devise a new model of sustainable development in the recent times and it is now a universally accepted model for the world, especially his model is much more relevant to the developing and the underdeveloped countries.

SELF HELP GROUPS AND MICRO FINANCING:

The concept of the Self Help Groups has attained popularity and acceptance in our country and abroad in the last two decades. There are so many Self Help Groups even in a

village or award in a town in India at present and as such, we can imagine the number of such groups across the country. These groups may prove effective in the economic prosperity of our country. There are provisions to extend small finance to the Self Help Groups on the part of government through some specialized banks like NABARD, SIDBI etc. The Self Help Groups also get other aids from different government agencies. These groups are extended government and non-government help in the minor sectors like dairy, fishery, poultry farm, horticulture, handloom etc. Engaging in such sectors with the aid of micro-finance system, the members of the Self Help Groups get chance to earn their livelihood and it helps in the poverty alleviation and bring economic prosperity to them. Such economic prosperity happens in a sustainable way without creating any notable harm to our environment. So, the Self Help Groups are important medias for bringing sustainable development to our economy.

ROLE OF KHADI AND VILLAGE INDUSTRIES IN INDIA'S ECONOMIC GROWTH:

The development of economy like India depends on the sound health of cottage industries and small scale industries. The Khadi and Village industries can bring change to our rural economy. The Khadi and Village Industries Commission (KVIC) is playing an important role in Indian economy as it covers about Rs. 2.48 lakhs villages throughout the country. The Khadi programme consists of promotion of cotton, silk, muslin, woolen and village industries consisting of 111 industries and implemented through directly aided agencies and state/UT level Khadi and Village Industries Board. In the recent years, KVIC has witnessed vast changes resulting from the introduction of new schemes and systems. The KVIC has formulated a scheme for financing projects with investment items up to Rs. 25 lakhs for rural industrialization and employment generation. The technologies and projects to be adopted by KVIC would be mainly directed towards increasing employment opportunities as well as productivity of artisans.

The government has launched development of Khadi and Village industries. The objective of this programme is to create about 1000 additional jobs in each block during the period of next three years. The KVIC has been playing an important role as an instrument to generate large scale employment in the rural areas with low per capita investment. The government will continue to encourage the Khadi and Village industry sector so that its products can become more competitive. The KVIC has also launched a massive marketing

development plan throughout the country so as to generate interest, awareness and industries' products. Accordingly, KVIC has approved a number of schemes in order to promote marketing of the products of village industries and also to offer employment opportunities to unemployed under Rural Employment Generation Programmes.

The government is implementing a comprehensive reform package for the Khadi Sector. This envisages upgradation and capacity building of 300 Khadi institutions and also improving their marketing skills. Under the package, steps are being taken to distribute 1 lakh modern Charkhas to artisans and also handlooms to various Khadi Sansthans. KVIC has been identified as one of the major organizations in the decentralized sector for generating sustainable non-farm employment opportunities in rural areas at a low per capita investment. It undertakes activities like skill improvement, transfer of technology, research and development, marketing etc. and also helps in generating self employment opportunities in rural areas. In order to attract younger generation, the KVIC is holding exhibitions, seminars, lectures in over 120 universities and colleges throughout the country so as to disseminate knowledge of KVI products. To create a market-niche for eco-friendly pure and bio-degradable natural products, the KVIC has introduced two new brands viz. 'Sarvodaya' and 'Khadi'.

The promotion of khadi and village industries must be emphasized in this sense that it has no side-effects of development. It is based on balanced growth of our economy. Our environment remains unharmed if we want to bring change to our economy through the revival and promotion of the cottage industries. Gandhiji also often advocated for the promotion of Khadi and Village industries. He preferred the cottage industries to the large scale heavy industries as he was of the belief that the promotion of the first cited industries could bring change to the millions of people in real sense. The father of the nation always talked of maintaining the balance of environment which is possible only in case of the village cottage industries, we need to put more emphasis on such industries. The micro-finance system initiated by the government and other agencies may help in the advancement and growth of such village cottage industries so as to alleviate the village poverty. The customers also seem concerned to the products of the traditional Khadi and Gramudyog provided they are displayed and manufactured in the market in some new, innovative and attractive design. Micro financing and proper training to those engaged in the sector of cottage industries may definitely lead our economy to sustainable development.

METHODOLOGY:

This paper is prepared on secondary data. Relevant books of college library have been discussed. Periodicals and newspapers have also been studied for analysis. Relevant data available in internet is used with caution.

FINDINGS OF THE STUDY:

The micro-finance system is an answer to our development in future. This system is based on balanced growth and has eco-friendly plus pro-poor background. It may prove strong means to bring both economic and social change to the underdeveloped and developing countries of the world. The scheme of micro- finance has been found as effective instrument for lifting the perished poor above the level of poverty by providing them adequate self employment opportunity and making them finance-worthy. Micro financing services have strengthened the social and human capital of poor, particularly women, at the household, enterprise and community level.

The myth that poor household cannot and donot save has been shattered by the concept of micro-finance system. Savings can be successfully mobilized from poor households. Poor, especially poor women have emerged as finance worthy clients, enabling microfinance service delivery at low transaction costs without relying on physical collateral. Sustainable delivery of microfinance services on a large scale in some countries has generated positive on a large scale in some countries has generated positive developments in microfinance policies, practices and institutions. The landscape of microfinance is changing as a result of increasing understanding of how the poor use money and their diverse demands for financial services. Correspondingly, the microfinance industry is evolving into an increasingly commercial operation to serve a larger segment of the potential market. A number of challenges need to be overcome to facilitate and accelerate this process to realize the vast potential of microfinance.

CONCLUSION:

We cannot separate the environmental issues from our economic development. Environmental pollution is a terrible challenge before the world at present. The so-called civilized people have caused damage of the environment to such an extent that if things go on such a way, we are bound to witness the dooms-day soon. And this is going to happen because we want to reach the pinnacle of development and make our life comfortable and enjoyable. But, this concept of development has proved a great blow to the entire world. Our

posterity will definitely question us what we did to safeguard their future. Even, we also throw some questions to our past generations for some of their misdeeds for which we are facing problem today. If we want that such unexpected things should not happen, we must change our attitude. However, change of attitude does not mean that we will do nothing for our development and prosperity. It is our duty to devise the way and new road-map to develop ourselves on a sustainable basis. And micro-finance system is one of such ways that can provide us an alternative path of sustainable development. Micro financing may show the pragmatic and realistic way of progress to the countries of the 'third world'. Even it is relevant to the developed economy of the western nations.

SUGGESTIONS:

Firstly, government and non-government agencies should take steps to popularize the concept of micro-finance system so that the common masses can take advantage of it.

Secondly, authorities and agencies should also provide the necessary training to the incumbents besides financing.

Thirdly, in countries like India, financing to the poor and illiterate villagers is still confusing and complex because of bureaucratic interference in the system. It should be ended and poor-illiterate villagers should have easy access to banks and other financial agencies so that they can take necessary aids from such institutions at right time.

Fourthly, those resource poor and population density areas, the poorest of the poor, and ethnic minorities often tend to be excluded by financial institutions because of risk return considerations, although the social returns to reaching these clients may be high. Therefore, it is important to support microfinance institutions and other financial institutions to expand the services to these categories through innovative programmes.

Fifthly, the poor and neglected village women can play a vital role in the economic development and social change through the micro-finance system, so, authorities should devise special programmes and projects aiming at the women upliftment and empowerment.

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Distance education: a challenge in the rural context impact of distance education for office working people

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Abstract:-

Educational Qualification, in present days, may be considered as the fourth basic need of human being. Realizing the value of education in all side development of personal & social life, people are, at present, spontaneously enrolled themselves for higher study. But it seems that, till now, there is a gap between the normal educational system and needs of all type of people. Condition of working officials is much worse. They could not manage to attend regular classes. Abolishment of the night shift classes by most of the colleges of our state i.e Assam, force them to give up their thirst for higher study. So, to include the names of such type of working people, especially working officials, in the list of highly educated people, need of an alternative institution is become higher & higher. This need, probably, along with many other causes gave-birth the concept of Open University. It comes as a blessing for many drop-out student. But as the paper deals with working officials only, discussion on condition of others are left out. Topic of this paper is "To study the impact on office working people under GU, IDOL Study Centre under Bilasipara Sub-division under the main theme of -to study the impact of Distance Education for office working people" The study was done during January – February, 2014

Bilasipara Sub-division is under Dhubri District of Assam is an agricultural based area with people of different races and religions as its resident. It is poor in all aspects of development, such as economy, communication, literature & education etc. It is situated in the northern bank of the river Brahmaputra in lower Assam zone. It is divided into two parts by National Highway No. 31. There are only three colleges for higher study that too up to degree level only.

Many office working people of this subdivision are in need for higher education to meet their service parameters as well as to meet the thirst for knowledge also. So, it can be seen that a lot of Office working people along with other dropout students have take the opportunity of higher

education through Distance Education. Hence, it may be concluded that distance learning becomes a major trend in the academic world of the subdivision.

Introduction: -

Thirst for educational qualification and gathering of knowledge is increasing day by day. Realizing the value of education in all side development of personal & social life, people are, at present, spontaneously enrolled themselves for higher study. But it seems that, till now, there is a gap between the normal educational system and needs of all type of people. At present, to fulfill the demand of students, each & every institute should have various faculties. But due to various reasons, it is almost impossible for most institutions of our country. Moreover, office working people could not attend their regular classes as at that time they are to attend their office where they work. A few decades ago, to enroll such type of disciple in formal education, many institutions for higher study had started night shift classes also. But this type of classes had been abandoned due to various reasons, which are beyond the limitation of this paper.

So, to include the names of such type of office working people in the list of highly educated people, need of an alternative institution is becoming higher & higher. This need, probably, along with many other causes gave-birth the concept of Open University..

Open Universities, now a day, seem to fulfill the basic needs of education for many dropout students, without which their thirst for knowledge will never be fulfilled. But as this paper will deal with the Servicemen only, that too within Bilasipara Subdivision, discussion on the success or failure of Open University is kept avoided.

Bilasipara Subdivision, we like to introduce, is under Dhubri District of Assam is an agricultural based area with people of different races and religions. It is poor in all aspects of development, such as economy, communication (it can be mentioned that it is almost untouched by Indian Railway tract til date), literature & education etc. But it is very rich in folk-culture. It is situated in the northern bank of the river Brahmaputra in lower Assam zone. It is divided into two parts by National Highway No. 31. There are only three colleges for higher study that too up to degree level only.

Objectives –

Aim of our discussion is to find out the impact on office working people under GU, IDOL study centre under Bilasipara Subdivision. However, the paper does not include the impact of these people on society. It also avoided the study of the impact of higher education on their personal & domestic life.

Methodology –

Our preliminary survey at all the three study centre of IDOL under G.U. under Bilasipara Subdivision (namely - Bilasipara College study centre, Sapatgram College study centre and Ratnapith College study centre) reveals the importance of the subject. So we made a thorough survey to find out the result by asking a previously prepared set of questions. These question along with a close comparison with some literature (both online & Books available) completed the work.

Discussion:-

During the study we find that, many office working people of this subdivision are in need of higher education to meet their service parameters as well as to meet the thirst for knowledge also. Due to need for a job to meet up their poor economic condition or as the job prospects of the current youth cohort in our country is far worse than those of their predecessors, they are compelled to give up their study in the middle of their course and join a job which may not be satisfactory for themselves. We may say that, jobs are much more than just the way we make a living. They influence how we see ourselves, as well as the way others see us. Our jobs give us structure, purpose, and meaning. That's why though none is ready to loss a job and remain in the list of unemployed person with a great stress. But their aim to reach the zenith bars them from job satisfaction. Most of them are intended to continue their study after joining the job. The reason of this may differ from person to person. But they are deprived of due to some similar reasons, like - (1) They could not manage to enroll themselves in regular colleges having day time classes as the rule & regulation of their respective offices do not permit them in doing so. (2) Many of them are of moderate type of student and could not compete with the superior students for enrollment in the colleges. It is worth mentioning that all the regular colleges have limited number of seat for each class. (3) In case of some people, it is much expensive to effort his personal study as he/she has to meet the expense of education for his/her child also, (4) lack of faculties, they are interested to continue their study in the colleges within their reach & this subdivision is far away from Guwahati to continue their study along with their normal duties, etc. Apart from these, many other causes barred them from allowing higher education. That is why, the Distance education system emerged as the only form of educational institution for them to complete their need of higher study.

In Bilasipara subdivision, there are only three colleges having normal degree course, but without any P.G. classes. Fortunately, all of these three colleges are providing their service as study center for some University with Distance education course like K.K.H.S.O.U and IDOL. of G.U. It comes as bless for many dropout students. But as the paper deals with working officials only, discussion on condition of others are left out. Because many office working people of this subdivision are in need of higher education to meet their service parameters as well as to meet the

thirst for knowledge also. So, it is found that a lot of Office working people along with other dropout students have taken the opportunity of higher education through Distance Education. It may be mentioned here that, all of the study centre under IDOL of G.U under Bilasipara subdivision are providing P.G. courses only. So targeted office working people for this paper in most cases are at least graduate in qualification. Some of them are Post graduate also and seeking post graduation in other subjects. Some other is interested in Post graduate diploma course to cope up themselves in some modern trends like computer operation.

Results :-

During the survey we have collected some data regarding the enrollment in entry level of PG courses of each study centre. The total no. of students enrolled and the total no. office working people in each session in each study centre are shown in the following table:

Study Centre	Session	Total admission	Total no. of office working people admitted	Successful (%)
Sapatgram College	2013-2014	50	08	awaited
Ratnapith College	2012-2013	51	36	awaited
Ratnapith College	2013-2014	113	79	awaited
Bilasipara College	2012-2013	96	20	awaited
Bilasipara College	2013-2014	260	105	awaited

From the above table it is clear that, number of office working people enrolled for higher study of this subdivision is increasing every year. This subdivision may be called as rural based subdivision as it includes a large number of villages within its border. So, we may conclude that, Distance Education, within its present context, has succeeded to draw the attention of office working people in rural areas to go for higher education. It can be mentioned that all the three centres of this subdivision (for both courses, ie. normal & Distant mode), though situated in urban area, are only

points of higher education for the villagers also. As expressed by the office working people, they become highly benefited through Distance Education as far as higher study is concerned. It may be added that, according to the students of all the three study centre of IDOL under G.U. under Bilasipara Subdivision seems to satisfy the facility provided by these centre. They are provided with (1) study materials, (2) Question papers of previous examinations, (3) Counseling classes (if required. That too in some selected subjects) (4) a list of web-sites for their further consultations, etc. But they recommended some more facilities too. As for example - (1) Audio-visual aids, (2) regular counseling after office hour, (3) proper library facility for reference books, (4) online facilities for the students enrolled in the study centre, etc.

With a keen observation on the facts cited above, one can come to the conclusion that, Distance Education of IDOL under G.U. has benefited the office working people under Bilasipara Subdivision who are interested to go for higher education. However our survey reveals that most of the students of this subdivision are interested to collect the certificate only. Knowledge gathering is a far reached object for them. On the other hand, some of the students, obviously from those who are interested to gather knowledge, blame the system adopted by the said university for this. According to them the study materials are examination oriented only, none can satisfy their eager for knowledge through these only. It is a fact that, reference books are very rare in all the book shops within their vicinity. So it may be considered as a bar to them. As the students can attend a few classes, consultation is done in holidays only, their eager remains unfulfilled and many questions remain unturned throughout their course. Moreover, the study centers under discussion are not providing online facility for the students till date. Many students from rural area could not manage to overcome this problem. Lack of facility for the practical based subjects, may be considered as another hurdle for a smooth study.

Conclusion:-

Now, it seems that Distance learning, within its present context, may stand as an alternate institution for higher education for office working people of rural areas, who need it but failed to enrolled themselves in normal type of institutions due to any one or more reasons mentioned earlier or the reason may other than those, which are mentioned in this paper. Though, it is a controversial method of teaching and there are many good and bad effects for the students and instructors involved in the curriculum, distance learning becomes a major trend in the academic world of the subdivision. So it can be seen that a lot of Office working people have taken the opportunity of higher education through this. However, study on the impact of these people on their respective society will clarify the impact of higher education on them; which in turn may declare the success of Distance Education in Nation building role.

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Pesticide Toxicity- A study

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Abstract:

The term "pesticide" describes a very large and diverse group of chemicals or products. Peoples are used pesticides to kill, prevent, repel, or in some way adversely affect some living organism. Pesticides are intended to kill organisms that cause disease and threaten health, control insects, fungus, and weeds that damage crops, control pests that damage homes and structures vital to public safety. Pesticides are designed to kill "pests", but some pesticides can also cause health effects in people. Most often, pesticides affect the nervous system producing cancer. General health effects from acute (short-term) exposures or poisonings. Pesticides by their nature are toxic to some degree. Even the least-toxic products, and those that are natural or organic, can cause health problems if someone is exposed to enough of it.

Pesticides can enter our body during mixing, applying, or clean-up operations. There are generally three ways a chemical or material can enter the body such as through the skin (dermal), through the lungs (inhalation), or by mouth (ingestion). The degree of toxicity determines what precautions must appear on the pesticide label. The pesticide toxicity categories are determined by the effects caused if the pesticide is consumed, inhaled, or placed in contact with the skin. The health effects of pesticides depend on the type of pesticide. Some, such as the organophosphates and carbamates, affect the nervous system. Others may irritate the skin or eyes. Some pesticides may be carcinogens. Others may affect the hormone or endocrine system in the body.

Keywords: Pesticide, Cancer, neurological diseases.

Introduction:

The term "pesticide" describes a very large and diverse group of chemicals or products. Peoples are used pesticides to kill, prevent, repel, or in some way adversely affect some living organism [1]. Pesticides are intended to kill organisms that cause disease and threaten health, control insects, fungus, and weeds that damage crops, control pests that damage homes and structures vital to public safety. Pesticides are designed to kill "pests", but some pesticides can also cause health effects in people. Most often, pesticides affect the

nervous system producing cancer. General health effects from acute (short-term) exposures or poisonings. Pesticides by their nature are toxic to some degree. Even the least-toxic products, and those that are natural or organic, can cause health problems if someone is exposed to enough of it. The pesticide toxicity categories are determined by the effects caused if the pesticide is consumed, inhaled, or placed in contact with the skin. The health effects of pesticides depend on the type of pesticide.

Route of exposure:

Pesticides can enter our body during mixing, applying, or clean-up operations. There are generally three ways a chemical or material can enter the body such as through the skin (dermal), through the lungs (inhalation), or by mouth (ingestion) [2]. People can be exposed to pesticides by a number of different routes including occupation, in the home, at school and in their food.

There are concerns that pesticides used to control pests on food crops are dangerous to people who consume those foods. These concerns are one reason for the organic food movement. Many food crops, including fruits and vegetables, contain pesticide residues after being washed or peeled. Chemicals that are no longer used but that are resistant to breakdown for long periods may remain in soil and water and thus in food.

Toxic effect of pesticides:

The degree of toxicity determines what precautions must appear on the pesticide label. The pesticide toxicity categories are determined by the effects caused if the pesticide is consumed, inhaled, or placed in contact with the skin [3]. The health effects of pesticides depend on the type of pesticide. Some, such as the organophosphates and carbamates, affect the nervous system. Others may irritate the skin or eyes. Some pesticides may be carcinogens. Others may affect the hormone or endocrine system in the body. Most studies on pesticide exposure found that neurological and neurodevelopmental disorder, birth defects, fetal death and acute health problems such as abdominal pain, dizziness, headaches, nausea, vomiting, as well as skin and eye problems may occur in workers that handle pesticides. A mother's occupational exposure to pesticides during pregnancy is associated with an increase in her child's risk of leukemia, Wilms' tumor, and brain cancer. It may also cause leukemia, lymphoma, brain, kidney, breast, prostate, pancreas, liver, lung, and skin cancers. Pesticides can be potent neurotoxins. When people are exposed to neurotoxins they may feel dizzy, lightheaded, confused and may have reduced coordination and ability to think. These are the short-term effects, while long term exposure can result in reduced IQ and learning disability,

associated with permanent brain damage. Pesticide exposure outcomes the risk of developing neurological Parkinson's disease. The long term exposures may increase the risk of dementia. The organophosphates pesticide hamper the development of some parts of the brain in children, leading to lower IQs and attention deficits. Preliminary evidence also suggests that pesticide exposure may affect sex-based differentiation in certain brain regions during early childhood development. Chronic exposure to high doses of pesticide Chlorpyrifos which is still widely used in agriculture is associated with neuro-degenerative diseases such as Parkinson's disease and cognitive deficits. Recent analyzed found that the effects on exposure of fetuses and infants affects the developing brain. Another commonly used organophosphate called diazinon had lower birth weight and birth length, abnormal newborn reflexes, and IQ deficits and behavioral problems as the children matured.

Exposure of pesticides may causes birth defects, fetal death and altered fetal growth. A number of pesticides including dibromochlorophane and 2,4-D has been associated with impaired fertility in males. Pesticide exposure resulted in reduced fertility in males, genetic alterations in sperm, a reduced number of sperm, damage to germinal epithelium and altered hormone function [4].The pesticide exposure is associated with long-term health problems such as respiratory problems, memory disorders and depression. A number of pesticides including clothianidin, dinotefuran, imidacloprid are toxic to bees. Exposure to pesticides may be one of the contributory factors to colony collapse disorder.

2,4-D, a widely-used phenoxy herbicide, goes by the name Weed-Be-Gone. There is suggestive evidence that 2,4-D causes cancer. The phenoxy herbicides are associated with increased risk for non-Hodgkins lymphoma, soft tissue sarcoma and prostate cancer. 2,4-D contained deadly dioxins, which are stored in fatty tissue, causing cancer, birth defects, miscarriages and reduced fertility

Epidemiology:

The World Health Organization and the UN Environment Programme estimate that each year, 3 million workers in agriculture in the developing world experience severe poisoning from pesticides, about 18,000 of whom die [5].

Control of toxicity:

Before approving a pesticide, The U.S. Environmental Protection agency (EPA) sets limits on how the pesticide may be used, how often it may be used, what protective clothing or equipment must be used, and so on [6]. These limits are designed to protect public health and the environment. Beyond the basic approval process for pesticides, which requires

pesticides to meet a standard for safety to humans and the environment. Only by specially trained and certified applicators are allowed to use pesticides. No harm will occur when pesticides are used according to label directions.

To reduce the risk of health problems from pesticides some points to be maintain:

- Identify the least-toxic way to control your pest; learn about Integrated Pest Management (IPM).
- Always read the pesticide label first! Select the appropriate product for your site, method and goals.
- Read all precautions and warnings on the label prior to use. These are intended to help you prevent harmful exposures.
- Take steps to minimize your exposure, even when using low toxicity pesticides

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Soul in Christianity

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Abstract:

The study has been carried out to evaluate the Christian theology of soul. The Christian view of the soul is based upon the teaching of both the Old Testament and the New Testament. In Christian belief the soul is a mental entity with intellectual and moral qualities, interacting with a physical organism but capable of continuing after its dissolution. Every soul lives only once on earth and is thereafter immortal. In Christianity, regarding the origin of the individual soul, three views have been maintained: creationism, traducianism and reincarnationism. Different branches of Christianity like the Catholic Church, Eastern Orthodox and Oriental Orthodox, Christadelphians, Seventh-day Adventists etc. give different definition of the soul. But all of them admit the existence of soul. Salvation is a key Biblical concept of God's glory and kingdom. Salvation is the saving of the soul; deliverance from sin and its consequences and admission to heaven brought about by Christ. According to Christianity, each individual has a unique soul which is created by God, and which, finally after death, lives eternally either in hell or heaven, its destiny depending on the judgment of its creator.

Key words: soul, salvation, hell, heaven.

Introduction:

The concept of soul is found in nearly all cultures and religion, though the interpretations of its nature vary considerably. Christian theology adopted the Greek concept of an immortal soul, adding the notion that God created the soul and infused it into the body at conception. The Christians believe that after death, the soul will be judged by God and determined to spend an eternity in heaven or hell.

The Christian view of the soul is based upon the teaching of both the Old Testament and the New Testament. As Christianity rose out of Judaism, the teachings of Jesus as recorded in the gospels reflect many of the Jewish beliefs of the soul and the afterlife, primarily that a reunion of body and soul will be accomplished in the next world. The Old Testament contains the statements "Then shall the dust return to the earth as it was: and the spirit shall return unto God who gave it" (Ecclesiastes 12:7) and "And the Lord God formed

man [of] the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.”¹ A statement by Paul the Apostle is found in the New Testament, “And so it is written, the first man Adam was made a living soul; the last Adam was made a quickening spirit.” (1 Corinthians 15:45).

In Christian belief every soul lives only once on earth and is thereafter immortal. The idea of soul is that it is a mental entity with intellectual and moral qualities, interacting with a physical organism but capable of continuing after its dissolution. After death, the soul gets separated from body and exists in a disembodied state. But, on the ‘Last Day of Judgement’ souls would be re-embodied and will live eternally either in hell or in the heavenly kingdom.

In sacred scripture the term ‘soul’ often refers to human life or the entire human being. The New Testament was heirs of a classical Hebrew view in which man does not have a body or have a soul; he is a soul-body unity. The unity of soul and body is so profound that one has to consider the soul to be the ‘form’ of the body: it is because of its spiritual soul that the body made of matter, becomes a living human body; spirit and matter, in man, are not two natures united, but rather their union forms a single nature.

As the soul of man is immortal it does not perish when it separates from the body at death, and it will be reunited with the body at the final resurrection.

Sometimes the soul is distinguished from the spirit: St. Paul for instance prays that God may sanctify His people ‘wholly’, with ‘spirit and soul and body’ kept sound and blameless at the Lord’s coming. The Church teaches that this distinction does not introduce a duality into the soul. ‘Spirit’ signifies that from creation man is ordered to a supernatural end and that his soul can gratuitously be raised beyond all it deserves to make the communion with God.

Within the development of Christian thought on the origin of the individual soul, three views have been maintained: creationism, traducianism and reincarnationism. Creationism is the doctrine that God creates a new soul for each human being at conception. Traducianism is the theory that the soul is transmitted along with the body by the Parents. It is widely been supposed that reincarnationism is alien to Christian thought, but this supposition is not warranted by the evidence. Christian reincarnationists hold that the soul passes through many embodiments in the process of its development and spiritual growth and is judged accordingly, not on the basis of only one life of indeterminate duration. The soul, in this view, has a very long history, with origins antedating humanity itself.

Concept of soul in different branches of Christianity:

Different branches of Christianity give different definition of the soul. According to the present Catechism of the Catholic Church, the soul is “the innermost aspect of humans, that which is of greatest value in them, that by which they are most specially in God’s image: ‘soul’ signifies the spiritual principle in man.”² All souls living and dead will be judged by Jesus Christ when he comes back to earth. Souls of those who die unrepentant of serious sins or in conscious rejection of God, will at Judgement Day be forever in a state called hell. The Catholic Church teaches the creationist view of the origin of the soul: “the doctrine of the faith affirms that the spiritual and immortal soul is created immediately by God.”³

Eastern Orthodox and Oriental Orthodox views are somewhat similar, in essence, to Roman Catholic views although different in specifics. Orthodox Christians believe that after death, the soul is judged individually by God, and then sent to either Abraham’s Bosom (temporary paradise) or Hell (temporary torture). At the Last Judgement, God judges all people who have ever lived. Those that know the Spirit of God, because of the sacrifice of Jesus, go to heaven (permanent paradise) whilst the damned experience the ‘lake of fire’ (permanent torture). The Orthodox Church does not admit the existence of Purgatory.

Protestants generally believe in the soul’s existence, but fall into two major camps about what this means in terms of an afterlife. Some, following Calvin, believe in the immortality of the soul and conscious existence after death, while others, following Luther, believe in the mortality of the soul and unconscious ‘sleep’ until the resurrection of the dead.

Some other Christians reject the idea of the immortality of the soul, citing the Apostles’ Creed’s reference to the ‘resurrection of the body’. They consider the soul to be the life force, which ends in death and will be restored in the resurrection. The Protestants do not usually believe in the idea of Purgatory.

Christadelphians believe that we are all created out of the dust of the earth and became living souls once we received the breath of life. According to them, we are mortal and when we die our breath leaves our body, and our bodies return to the soil. They believe that we are mortal until the resurrection from the dead when Christ returns to this earth and grants immortality to the faithful. In the meantime, the dead lie in the earth in the sleep of death until Jesus comes.

Seventh-day Adventists believe that the main definition of the term ‘soul’ is a combination of spirit (breath of life) and body, disagreeing with the view that the soul has a consciousness or sentient existence of its own. They affirm this through Genesis 2:7 “And

(God) breathed into his nostrils the breath of life; and man became a living soul.” When God united His breath or spirit with man, man became a living soul. A living soul is composed of body and spirit. They believe that when one dies, their spirit goes back to God who gave it, at which point one is no longer a living soul.

Jehovah’s Witnesses take the Hebrew word *nefesh*, which is commonly translated as ‘(soul)’, to be a person, an animal, or the life that a person or an animal enjoys. They believe that the Hebrew word *rua* (Greek *pneuma*), which is commonly translated as ‘(spirit)’ but literally means ‘wind’, refers to the life force or the power that animates living things. A person is a breathing creature; a body animated by the ‘spirit of God’, not an invisible being contained in a body and able to survive apart from that body after death. Jesus spoke of himself, having life, as having a soul. When he surrendered his life, he surrendered his soul. John 10:15 reads “just as the Father knows me and I know the Father, and I surrender my soul in behalf of the sheep.” This belief that man’s life force is his soul is also in line with the knowledge that hell or ‘Hades’ represents the common grave and the possibility of eternal annihilation for the wicked rather than eternal torment in hellfire.

Latter-day Saints believe that when the body and spirit are connected in mortality, this is the soul of man (mankind). They believe that the soul is the union of a spirit, which was previously created by God, and a body, which is formed by physical conception on earth. The spirit, not the soul, progresses to the spirit world after death.

Augustine, one of Western Christianity's most influential early Christian thinkers, described the soul as “a special substance, endowed with reason, adapted to rule the body.”⁴ Some Christians espouse a trichotomic view of humans, which characterises humans as consisting of a body (*soma*), soul (*psyche*), and spirit (*pneuma*). However, the majority of modern Bible scholars point out how spirit and soul are used interchangeably in many biblical passages, and so hold to dichotomy: the view that each of us is body and soul. The soul, therefore, is not only logically distinct from any particular human body with which it is associated; it is also what a person is. Richard Swinburne, a Christian philosopher of religion at Oxford University, wrote that “it is a frequent criticism of substance dualism that dualists cannot say what souls are.... Souls are immaterial subjects of mental properties. They have sensations and thoughts, desires and beliefs, and perform intentional actions. Souls are essential parts of human beings...”⁵

God in Christianity:

According to the Christian religion God is divine and is omnipresent, omnipotent, and omniscience. Although Christianity is essentially monotheistic believing in only one God, yet God is pointed as three persons into one. The idea of God as three persons into one is known as the idea of Trinity. The three persons in one are God, the Father, God, the Son and God the Holy Spirit. Jesus is the second person, the Son incarnate and the third person is the Holy Spirit, the Spirit of love. The Holy Spirit is taken to proceed from the Father and the Son. Christianity's approach is that man was created by an external God in which the goal of the Christian's life is to be one with God. This oneness with God is considered to be attainable by following the teachings of Jesus Christ who was considered to be God's physical embodiment here on earth. Jesus was considered as one with God, the son of God and yet God himself too. His teachings were those that came from God's commands. Thus the way to God was through Jesus and his teachings, the Bible.

According to Christianity, God created the universe out of nothing. The Christian's God is truly the world's Creator and upholder, supporting it by his divine will and in fact this Creator or God is the highest, than whom nothing higher can be proved. Christianity believes that God and man are different. "God created man in his own image, in the image of God he created him, male and female he created them."⁶ Though God created man in His own image, but the world and men exist separately from Him.

Afterlife in Christianity:

As the Soul in man is immortal, death is not the total and final end of man. There is an afterlife too, the main ingredients of which are— the Day of Judgement, resurrection of the dead and the assignment of heaven and hell to people in accordance with their good or bad deeds on earth. After death, the soul is judged by the God on the Day of Judgement. But what happens to the soul in the intermediary period, i.e. during the period between the death of an individual and the final Day of Judgement? To this question Christianity seems to believe in two kinds of judgement— the particular judgement and the universal judgement. The universal judgement is the final judgement made at the end of the world which is applicable to all. But before the final or universal judgement, there is a particular judgement, i.e. judgement in case of a particular individual immediately after his physical death. There is the idea that if a person dies in the love of God and his fellow-beings, he is taken as unstained and is 'straightway received into heaven' where the soul would dwell with God eternally. And again the soul of a man who has lived a sinful life quite in disobedience of God's will,

straightway goes down to hell where the soul of the evil people would be cast into a lake of fire for eternity. Those, who although have been stained by sins, but have shown sincere repentance and have undergone penance etc., are first, sent to the Purgatory for purification and thence to heaven. Purgatory is deemed in Christianity as a place (or a state) in which the souls of those who have been stained by sin but have died in repentance are detained for purging or cleansing, so that they may be rendered fit for the company of God. After this act of purging they are sent to heaven.

Salvation in Christianity:

Salvation is a key Biblical concept of God's glory and kingdom. Salvation means an afterlife in heaven. Salvation obtains an even more important place in the New Testament. The Gospels regard salvation as the purpose of Christ life. He has come to the earth to save that which was lost, to save the world and not to condemn it. God desires the salvation of all men. For this reason He has sent His son as saviour of the world and has made the Gospel an instrument for the salvation of every believer. In preaching it, an apostle has no other purpose, but the salvation of men. Salvation is also the meaning of the Christian life. The Gospel confronts men with a choice between salvation and doom, life and death. In the fear of the Lord they must work out their salvation, which is the object of the Christian hope.

Man's salvation is likewise described under many other concepts and metaphors, such as consolation and reward, the peace and justice of God, liberation, divine ship, vision of God and above all as eternal life. Salvation is the saving of the soul; deliverance from sin and its consequences and admission to heaven brought about by Christ. According to Christ, whoever believes in him may have eternal life in heaven. Those on the other hand who refuse to glorify God and reject the invitation into his kingdom call down perdition upon themselves.

Conclusion:

According to Christianity, every man and woman of the Christian way who truly believes in the power of Christ will rise with him in a body that will be like Christ's 'glorious' body. The resurrection of Christ makes us capable of personal resurrection, yet we can attain our own resurrection only in so far as we appropriate the power of Christ, which we can do through believing in its efficacy and accepting his divine gift of salvation from death and victory over the grave. It is the soul of man that Jesus died to redeem on the cross. "God evidently designed that the human spirit, indwelt and ruled by the Holy Spirit, should

keep man in constant touch with Himself, and maintain in everything its proper preeminence, ruling soul and body.”⁷ The soul seems to be the part of man midway between the body and the spirit, yet it is not a mixture of the two, though at times it seems to take on characteristics of one or the other. The soul joins two worlds, the physical and the spiritual. The spirit is the noblest part of man and occupies the innermost area of his being. The body is the lowest and takes the outermost place. Between these two dwells the soul, serving as their medium. The work of the soul is to coordinate the activities of the two diverse parts.

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An ARM Analysis on Practice of Hand Wash among the Urban & Rural Bodo Women

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Abstract

Background: Hand wash is a hygienic measure and is believed to reduce infection transmission by washing off potential microorganisms and also by removing the dirt.

Objectives: To study the knowledge and practice of hand wash among the rural and urban Bodo women. **Settings and Design:** It was a random sample study, for which a pilot survey was carried out in the month of October, 2014. **Materials & Methods:**

Materials are primarily collected from rural and urban areas of Kokrajhar district where interview and observation technique is applied and analyzed by using ARM analysis.

Result: Knowledge and practice of hand wash amongst the Bodo women in urban and rural areas are almost same. **Conclusion:** Bodo women in the surveyed areas have good knowledge and practice of hand wash. Therefore, to many extends they lead a healthy life.

Keywords: Bodo Women, Hand Wash, Healthcare, ARM, Datasets

1. Introduction

Hand wash with water, soap or disinfectants is a hygienic measure in terms of keeping ourselves free from germs and contamination. But in general many people wash their hands with only water and thus contaminated hands give rise to fecal-oral transmission of diseases. Washing hands is believed to reduce infection transmission by washing off potential microorganisms and also by removing the dirt, which could also harbor microorganisms and allow their survival for longer periods of time.

Association Rule Mining (ARM) is a procedure, an important component of Data Mining (DM) to search relationships among data items in a given dataset which helps in managing all the data items. Data mining is most often synonym to knowledge discovery which could be defined as nontrivial extraction of implicit, previously unknown and potentially useful information from the data [HK06]. Association with a very high support and confidence is pattern that occurs in the database which should be obvious to the end user and

is of great importance. Association rules are used when dataset has large data items. Patterns having extremely low support and confidence should be regarded as of no significance. Only patterns with a combination of intermediate values of confidence and support provide the user with interesting and previously unknown information [P11].

ARM finds interesting patterns or correlation relationships among a large set of data items. With massive amounts of data continuously being collected and stored, many organizations are interested in mining associations. With the discovery of interesting association relationships among huge amount of records, it can help in decision making processes [HK06].

2. Objectives

1. To study the knowledge of hand wash among Bodo women of rural and urban areas.
2. To study the practice of hand wash among Bodo women of rural and urban areas.

3. Background Literature

In 1847, Dr. Semmelweis Ignac pointed out the association between infection and unclean hands, and demonstrated that washing hands could reduce transmission of puerperal fever (child birth fever). [RASM11] dealt with washing hands and removing the dirt which they believed to reduce infection transmission. “The use of soap in addition to water was first reported in 2800 B.C. The history of synthetic detergents is much more recent, going back only to the beginning of the 20th century” [HH11]. The concept of cleansing hands with antiseptic agents probably came into scenario in the early 19th century [HH11]. According to the study made by [RDMCRB06], in the early 1825, a French pharmacist experimented that solutions containing chlorides of lime or soda generally eradicate bad odour especially associated with corpse and that such solutions could be used as disinfectants and antiseptics. According to [SBMP01], in the study of healthcare, they have mined association rules from clinical databases: an intelligent diagnostic process in healthcare. They have applied the Apriori algorithm to a database containing records of diabetic patients and attempted to extract association rules from the stored real parameters. [RV09] have studied regarding “An efficient pattern mining analysis in healthcare database” where Association Rules are discovered by identifying relationships among sets of items in a transaction database with two measures which quantify the support and confidence of the rule. Finding frequent itemsets is computationally the most expensive step in Association Rule discovery and therefore, it has attracted significant research attention. [RV09] reviewed Apriori related and Eclat algorithms with detailed discussion about various data structures.

4. Materials and Methods

The study was carried out in rural and urban areas of Kokrajhar district in October 2014. Under rural areas Borsijhora and Ballimari villages are considered and under urban areas Kokrajhar MB and Gossaigaon TC are considered for the study. A pre-designed proforma/questionnaire was designed and deployed for the collection of materials. 100 samples have been gathered with 50 each from rural and urban areas among Bodo women by using interview method and observation technique which were later analyzed by using Association Rule Mining (ARM). R & D tools like SPSS13.0, Visual Basic & MS-Access are used for the study and MS-Excel & MS-Word are used for calculation and documentation respectively. Data is being preprocessed and Hand Wash Database (HWD) has been prepared.

Figure 4.1 Extract of HWD

ID	sub_div	Urban_Rural	Gender	Interview_Place	Age	Qualification	Occupation	Piped	ground_water	well
1	Kokrajhar	Urban	Female	House	40	M.PHIL	teacher	residence	NA	NA
2	Kokrajhar	Urban	Female	House	25	MA	Student	residence	NA	NA
3	Kokrajhar	Urban	Female	House	42	BA	clerk	residence	NA	NA
4	Kokrajhar	Urban	Female	House	45	M.PHIL	teacher	residence	NA	NA
5	Kokrajhar	Urban	Female	House	21	Higher Seco	Student	residence	NA	NA

5. Analysis

Analyzing data is a vital stage where the researcher has to be well known with the knowledge of what is to be achieved and what has already been achieved. In order to extract hidden information from the database HWD, some of the viable factors in general conditions are being considered such as hand wash before and after meal, before and after defecation, etc.

5.1 Frequent itemset generation:

Agarwal and Srikant in 1994 proposed an algorithm known as *APRIORI* for mining frequent itemsets for Boolean association rules [HK06] is used by the researcher for generating frequent itemsets. The Apriori algorithm is the most well known association rule-mining algorithm in Data mining.

Interestingness of data is measured from Frequent Itemsets, Closed Itemsets, where Association Rules satisfy minimum support threshold and a minimum confidence threshold. Let $I = \{I_1, I_2, \dots, I_m\}$ be a set of items. Let D be a set of database transactions where each transaction T is a set of items such that $T \subseteq I$. Let A be a set of items. An association rule is an implication of the form $A \Rightarrow B$, where $A \subseteq I$, $B \subseteq I$ and $A \cap B = \emptyset$. The rule $A \Rightarrow B$ hold in the

transaction set D with support s , where s is percentage of transactions in D that contains $A \cup B$. This is taken to be probability, $P(A \cup B)$. The rule $A \Rightarrow B$ has confidence c in the transaction set D , where c is the percentage of transactions in D containing A and that also contain B . This is taken to be the conditional probability, $P(B | A)$.

That is, *support* ($A \Rightarrow B$) = $P(A \cup B)$ and *confidence* ($A \Rightarrow B$) = $P(B | A)$

From the present analysis of 100 samples, support count is evaluated from which some rules were generated using frequent pattern mining.

[BPB05] utilizes the following Pseudo code to generate association rules from large itemsets:

Input:

D // database of transaction

I // items

L // large itemset

S // support

α // confidence

Output:

R // Association rules

Association_Rule_Generate_Procedure:

$R = \{ \}$

for each $I \in L$ do

 for each $X \subset I$ such that $X \neq \{ \}$ do

 if $\text{support}(I) / \text{support}(X) \geq \alpha$ then

$R = R \cup \{ X \Rightarrow (I - X) \};$

 end_of_if

 end_of_for

end_of_for

Figure 5.1.1 Algorithm to generate Association Rules from large datasets

The minimum *support* count of 30 and minimum *confidence* count of 50 would be considered as interesting. By applying apriori algorithm, frequent itemsets were generated with minimum support count of 30. The *confidence* could be evaluated from the non-empty subsets of the candidate itemsets and frequent itemsets. The required frequent itemsets were searched from large itemset and rules are generated. The scanning of HWD begins with

counting the transactions with a minimum support count of 30 and a minimum confidence of 50. The following extracted table from HWD represents dimensions with having knowledge of handwash, washing material as soap, antiseptic, to stay clean, or to stay germ free for why do we wash hands?

urban_rural_hand_wash relation

urban_rural	handwash_knowledge	washing_material	why_to_hand_wash
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Figure 5.1 urban_rural_hand_wash relation

Dimension	handwash_knowledge	washing_material	why_to_hand_wash
Response dataset	Having Knowledge	Water & Soap	Stay clean or germ free
supp_count	76	63	100

Table 5.1 Having knowledge, using soap, stay clean etc

rural_urban (X, "Urban") \wedge Handwash_knowledge (X, "Yes") \Rightarrow washing_material (X, "Water & Soap")

[support=63%, confidence=100%].....Rule(5.1)

rural_urban (X, "Rural") \wedge Handwash_knowledge (X, "Yes") \Rightarrow washing_material (X, "Water & Soap")

[support=76%, confidence=50%].....Rule(5.2)

After analysing the above Rules (5.1 & 5.2), it is found that there is 100% probability of using soap those who have knowledge of hand wash and living in urban areas where as in rural areas Bodo women have only 50% possibilities of using soap those who have knowledge of handwash.

rural_urban (X, "Urban") \wedge handwash_knowledge (X, "yes") \Rightarrow why_to_wash_hands(X, "to stay clean")

[support=100% , confidence=100%].....Rule (5.3)

rural_urban (X, "Rural") \wedge handwash_knowledge (X, "yes") \Rightarrow why_to_wash_hands(X, "to stay clean")

[support=100% , confidence=100%].....Rule (5.4)

The above Rules (5.3 & 5.4) implies that Bodo women those who are residing either in rural or urban areas have 100% probability of washing hands to stay clean or germ free.

rural_urban (X, “Urban”) \wedge washing_material (X, “Water & Soap”) \Rightarrow
 why_to_wash_hands(X, “to stay clean”)
 [support=100% , confidence=100%].....Rule (5.5)

rural_urban (X, “Rural”) \wedge washing_material (X, “Water & Soap”) \Rightarrow
 why_to_wash_hands(X, “to stay clean”)
 [support=100% , confidence=100%].....Rule (5.6)

If the above Rule (5.5 & 5.6) is analyzed it could be observed that cent percent of the respondents living in rural or urban areas use water & soap for washing hands to stay clean or germ free. Therefore, Rule (5.5 & 5.6) implies there is 100% probability of washing hands to stay clean or germ free by using washing material like soap etc.

As for the practice of hand wash among the urban and rural Bodo women, the relational dataset from HWD was analyzed according to the availabilities of source of water, factors for hand washing, their use of washing material, how long they usually wash their hands?. The relational datasets as per practice of hand wash are analyzed subsequently one after another.

From the HWD the associated relations are extracted and it is found as-
 urban_rural_hand_wash relation

urban_rural	{factors}	water_source	water_kind	washing_material	duration
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Figure 5.2 urban_rural_hand_wash relation

Where {factors} signifies the general condition when hand wash is viable.

Dimension	after_blow_or_wipe_nose	after_using_toilet	washing_material
Response Dataset	Always	Always	Water & Soap
supp_count	86	80	63

Table 5.2 Some factors of hand wash and washing material

Analysis shows -

after_blow_or_wipe_nose (X, “Always”) \wedge after_using_toilet (X, “Always”) \Rightarrow
 washing_material (X, “Water & Soap”)
 [support = 70%, confidence=88.33%].....(5.7)

The above rule represents that 70% of the respondents who Always wash their hands after blowing or wiping nose and Always wash their hands after using toilet, there is a 88.33% probability that they are using Soap as washing material.

It is observed that cent percent of the respondent usually wash their hands before and after meal i.e.

$$\begin{aligned} & \text{rural_urban (X, "Urban")} \wedge \text{before_meal (X, "Always")} \Rightarrow \\ & \quad \text{after_meal (X, "Always")} \\ & \quad [\text{support}=100\%, \text{confidence}=100\%] \dots \text{Rule (5.8)} \end{aligned}$$

$$\begin{aligned} & \text{rural_urban (X, "Rural")} \wedge \text{before_meal (X, "Always")} \Rightarrow \\ & \quad \text{after_meal (X, "Always")} \\ & \quad [\text{support}=100\%, \text{confidence}=100\%] \dots \text{Rule (5.9)} \end{aligned}$$

The Rules (5.8 & 5.9) so mined represents 100% of the Bodo women in the surveyed areas both in urban and rural who always wash their hands before meal have 100% probability of washing hands after meal.

After scanning interested dimensions such as urban_rural, after_using_toilet with 'Always' stands at 80, and washing material at 63 and both at 63 we have,

$$\begin{aligned} & \text{rural_urban (X, "Urban")} \wedge \text{after_using_toilet (X, "Always")} \Rightarrow \\ & \quad \text{washing_material (X, "Soap")} \\ & \quad [\text{support}=63\%, \text{confidence}=100\%] \dots \text{Rule (5.10)} \end{aligned}$$

$$\begin{aligned} & \text{rural_urban (X, "Rural")} \wedge \text{after_using_toilet (X, "Always")} \Rightarrow \\ & \quad \text{washing_material (X, "Soap")} \\ & \quad [\text{support}=63\%, \text{confidence}=100\%] \dots \text{Rule (5.11)} \end{aligned}$$

It would mean that 63% of the Bodo women both in rural and urban areas who always wash hands after using toilet, there is 100% probability of always washing hands with Soap.

$$\begin{aligned} & \text{urban_rural (X, "Urban")} \Rightarrow \text{before_cooking (X, "Always")} \\ & \quad [\text{support}=87.3\%, \text{confidence}=75\%] \dots (5.12) \end{aligned}$$

$$\begin{aligned} & \text{urban_rural (X, "Rural")} \Rightarrow \text{before_cooking (X, "Always")} \\ & \quad [\text{support}=87.5\%, \text{confidence}=74.6\%] \dots (5.13) \end{aligned}$$

$$\begin{aligned} & \text{urban_rural (X, "Urban")} \Rightarrow \text{before_serving (X, "Always")} \\ & \quad [\text{support}=87.1\%, \text{confidence}=71.8\%] \dots (5.14) \end{aligned}$$

$$\begin{aligned} & \text{urban_rural (X, "Rural")} \Rightarrow \text{before_serving (X, "Always")} \\ & \quad [\text{support}=85.9\%, \text{confidence}=74.2\%] \dots (5.15) \end{aligned}$$

$$\begin{aligned} & \text{urban_rural (X, "Urban")} \Rightarrow \text{after_defecation (X, "Always")} \\ & \quad [\text{support}=100\%, \text{confidence}=100\%] \dots (5.16) \end{aligned}$$

$$\text{urban_rural (X, "Rural")} \Rightarrow \text{after_defecation (X, "Always")} \\ [\text{support}= 100\% , \text{confidence}=100\%] \dots \dots \dots (5.17)$$

The above rules so generated after scanning HWD from (5.12) to (5.17) it could be analyzed that practice of hand wash on some factors like hand wash before cooking, before serving etc. amongst the Bodo women in urban and rural areas have same type of support %age.

The above multidimensional association rules are instigated with practice of hand washing between the rural and urban Bodo women.

6. Results

6.1 Result I:

The knowledge of hand washing to be effective there must exist awareness of knowledge how to wash hands? What washing materials are to be used? Why it is necessary to wash hands? These are the certain dimensions which we have examined according to the surveyed data.

Therefore, the above Rules from Rule (5.1) to Rule (5.6) infers that bodo women living in both rural and urban areas (surveyed areas) have more or less same knowledge of hand wash.

6.2 Result II:

As per ARM, Rule (5.7) to Rule (5.17) clearly confers that there is clear visibility of even practice of hand wash among the rural and urban Bodo women are same to many extends.

7. Discussion & Conclusion

Though it is always shown that washing hands with soap is effective, it is still not a common practice. If we look into the wider scenario, there are still numerous variations in the prevalence of hand washing behavior and use of soap or disinfectants for hand washing is not widespread. In many situations systemic analysis could chalked out effectiveness in washing hands in reduction of infections or illness. Amongst the Bodo women in the surveyed areas they have enough knowledge and practice good hand wash to lead a healthy life.

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