A STUDY TO EXPLORE THE EFFECTIVENESS OF A NEWLY DEVELOPED SES SCALE AS A TOOL FOR MEASURING SES OF THE FAMILY IN RURAL AND URBAN AREAS AND TO COMPARE WITH COMMONLY USED SES SCALE

A Case Study By Mrs.Shalini Baskaran, Oman
(MSc Nurshing., PhD in Public Health Student of Texila American University)
Email id:-shalubaski@gmail.com

ABSTRACT

Socioeconomic status is commonly conceptualized as the social standing or class of an individual or group. It is often measured as a combination of education, income and occupation. Socio economic status (SES) of the people in a country is very essential as it is one of the important factor determining the health, education, mortality, morbidity and nutritional status of an individual. Socioeconomic status also determines the people's ability to access, afford, accept and utilize the health care services available in the society. The socioeconomic status (SES) is widely recognized as one of the important factors affecting the health condition of an individual or a family.

India is the second largest populated country and Minister of State for Planning and Parliamentary Affairs Rajeev Shukla in a written statement to RajyaSabha has stated that 27 crore people live below the poverty line in the country. (India Today).
The Planning commission said that the number of those below the poverty line declined to 21.9% of the population in 2011-12, from 29.8% in 2009-10 and 37.2% in 2004-05.The estimate, based on a survey of household consumer expenditure, showed rural poverty declined to 25.7% from 41.8% in 2004-05, while in urban areas it fell to 13.7% from 25.7%. (Economic Times – 2013)

India as a vast democratic country, there is a need in identifying the actual beneficiaries who will be benefitted by the government programs/subsidies. Socio economic status scales are widely used to classify the SES and it is important to analyze that these tools are effective in identifying the SES of the family.

Many different scales are available to measure the SES of a family and most widely used scale in urban community is Kuppuswamy scale (Modified) and it is based 3 categories – education, occupation of the head of the family and Income from all the sources. Modified Prasad scale has been widely used in India and it is mainly based on per capita monthly income. Pareek SES classification scale is used in rural areas and it is based on nine charecteristics caste, occupation,

education, level of social participation of head of the family, landholding, housing, farm power, material possession and total members in the family.A conversion factor is calculated based on current All India Consumer Price Index (AICPI) to get current income group. The Government of India in the National Family Health Survey (NFHS - II) had used the Standard of Living Index (SLI) scale which contains 11 items viz. house type, source of lighting, toilet facility, main fuel for cooking, source of drinking water, separate room for cooking, ownership of the house, ownership of agricultural land, ownership of irrigated land, ownership of livestock, ownership of durable goods for measuring the SES both urban and rural areas for the entire country. However each of these scales available for measurement have their own advantages and disadvantages.

The present study had explored the reliability of a newly developed scale which need replication to assess the validity of the tool. It can be used in both urban and rural.

KEYWORDS

SES, Healthcare, Poor health, Social measures, Academic Achievement, Risk factors.

INTRODUCTION

GENERAL CONSIDERATION

Socioeconomic status (SES) is assessed based on a combination of factors including income, educational level, and occupation. It is a measure to look at how the families or individuals stand into society with the use of economic and social measures. SES has a strong impact on individuals health and well being.

Socioeconomic status and health are closely related, and SES can often have profound effects on a person's health due to differences in ability to access health care as well as dietary and other lifestyle choices that are associated with both finances and education.

Poverty, illetracy or lower educational level and poor health are closely related and it affects the productivity of the individual and the society as a whole. Globally there is an increase in the inequity in wealth distribution, resource allocation, utilization and quality of life. So, reducing the gap in socio economic status will benefit the society.

SES AND EDUCATIONAL ISSUES

Many research findings reveal that children from low SES has poor academic skills compared to children from higher SES groups. (Morgan, Farkas, Hillemeier & Maczuga 2009). Initial academic skills are correlated with the home environment, where low literacy environments and chronic stress negatively affect a child's pre academic skills. The school systems in low-SES

communities are often under resourced, negatively affecting students' academic progress (Aikens & Barbarin, 2008). Inadequate education and increased dropout rates affect children's academic achievement, perpetuating the low-SES status of the community. Improving school systems and early intervention programs may help to reduce these risk factors, and thus increased research on the correlation between SES and education is essential.

SES AND FAMILY RESOURCES

Families from low-SES communities are less likely to have the financial resources or time availability to provide children with academic support. Children's initial reading competence is correlated with the home literacy environment, number of books owned, and parent distress (Aikens & Barbarin, 2008). However, parents from low-SES communities may be unable to afford resources such as books, computers, or tutors to create this positive literacy environment (Orr, 2003). In a nationwide study of American kindergarten children, 36% of parents in the lowest-income quintile read to their children on a daily basis, compared with 62% of parents from the highest-income quintile (Coley, 2002). When enrolled in a program that encouraged adult support, students from low-SES groups reported higher levels of effort towards academics (Kaylor & Flores, 2008).

SES AND THE SCHOOL ENVIRONMENT

Research indicates that school conditions contribute more to SES differences in learning rates than family characteristics (Aikens & Barbarin, 2008). Schools in low-SES communities suffer from high levels of unemployment, migration of the best qualified teachers, and low educational achievement (Muijs, Harris, Chapman, Stoll, & Russ, 2009).

A teacher's years of experience and quality of training is correlated with children's academic achievement (Gimbert, Bol, & Wallace, 2007). Yet, children in low income schools are less likely to have well-qualified teachers. In fact, of high school math teachers in low income school districts 27% majored in mathematics in college as compared to 43% of teachers who did so in more affluent school districts (Ingersoll, 1999). The following factors have been found to improve the quality of schools in low-SES neighborhoods: a focus on improving teaching and learning, creation of an information-rich environment, building of a learning community, continuous professional development, involvement of parents, and increased funding and resources (Muijis et al., 2009).

SES AND ACADEMIC ACHIEVEMENT

Research continues to link lower SES to lower academic achievement and slower rates of academic progress as compared with higher SES communities. Children from low-SES environments acquire language skills more slowly, exhibit delayed letter recognition and phonological awareness, and are at risk for reading difficulties (Aikens & Barbarin, 2008). Children with higher SES backgrounds were more likely to be proficient on tasks of addition, subtraction, ordinal sequencing, and math word problems than children with lower SES

backgrounds (Coley, 2002). Students from low-SES schools entered high school 3.3 grade levels behind students from higher SES schools. In addition, students from the low-SES groups learned less over 4 years than children from higher SES groups, graduating 4.3 grade levels behind those of higher SES groups (Palardy, 2008).

In 2007, the high school dropout rate among persons 16- 24 years old was highest in low-income families (16.7%) as compared to high-income families (3.2%) (National Center for Education Statistics, 2008).

PSYCHOLOGICAL HEALTH

Increasing evidence supports the link between lower SES and learning disabilities or other negative psychological outcomes that affect academic achievement.

Children from lower SES households are about twice as likely as those from high-SES households to display learning-related behavior problems. A mother's SES was also related to her child's inattention, disinterest, and lack of cooperation in school (Morgan et al., 2009).

Identifying as part of a lower/working class in college has been associated with feelings of not belonging in school and intentions to drop out of school before graduation (Langhout, Drake, &Rosselli, 2009).

Perception of family economic stress and personal financial constraints affected emotional distress/depression in students and their academic outcomes (Mistry, Benner, Tan, & Kim, 2009).

NEED FOR THE STUDY

Socio economic status directly or indirectly associated with the health status of the community. Socioeconomic status is a measure of an individual's or family's economic and social position based on education, income, and occupation. It is considered as a strong predictor of health that an assessment of the health of would be incomplete without consideration of the socioeconomic status of the people. Research findings show that there is a socio economic status is one of the most powerful risk factor for the poor health outcome. The Education, occupation, place of residences, health belief, income, health behavior, access to health care facility, environment are the inter related factors that determine the health of an individual. The proportion of Individual from a low economic status who suffer from diseases and the mortality rate is comparatively higher than a person from high economic status. Infant and maternal mortality rate, low birth weight babies, homicide and suicide, cardio vascular disease, follow up and outcome, diabetes mellitus has a strong link with Socio economic status. Individual behaviour has an association with health and socio economic status. Eg. Smoking and alcohol. Heath care demand is great for an individual from a lower socio economic status but the available resources like money, social support, access to health care are less than the demand.

Many research studies have found that a higher level of educational attainment is a strong predictor of access to economic and healthcare resources. The variation in educational attainment may contribute to the differences in access and utilization of health care among different social groups.

Poverty and low living standards are powerful determinants of ill health and health inequity. Social economic status provides a deeper understanding of clinical phenomena. The poor had a higher incidence of some diseases whereas the rich have others. Health practices like the use of health services, welfare and maternity clinics, and methods of infant feeding were found to be correlated with social class.

Assessment of socioeconomic status (SES) is an important aspect in community based studies. Evaluation of SES of a family would mean the categorization of the family based on defined variables such as, education, occupation, economic status, physical assets, social position etc. Some of these variables can be evaluated simultaneously. Several methods or scales have been proposed for classifying different populations by socioeconomic status: Rahudkar scale 1960, Udai Parikh scale 1964, Jalota Scale 1970, Kulshrestha scale 1972, Kuppuswamy scale 1976, Shrivastava scale 1978, Bharadwaj scale 2001(1-7). The most widely accepted scale for urban populations has been proposed by Kuppuswamy in India in 1976. A study has recently been suggested for updating the Kuppuswamy scale. A study conducted by O.P. Aggarwal in 2005 came out with a new scale and there is a need to repeat the study to check the validity of the scale.

STATEMENT OF THE PROBLEM

A study to explore the effectiveness of a newly developed SES scale as a tool for measuring SES of the family in rural and urban areas and to compare with commonly used SES scale.

TYPE OF RESEARCH

Design: Cross sectional / replication study.

OBJECTIVE

1. To assess the SES of families in rural areas with the new SES scale.

2. To assess the SES of families in urban areas with the new SES scale.

3. To compare the SES with the commonly used SES scale.

REVIEW OF LITERATURE

Adler NE, Ostrove JM in a research finding showed that the nature of the relationship of SES and health, revealing a graded association; SES is important to health not only for those in poverty, but at all levels of SES. On average, the more advantaged individuals are, the better their health. There are multiple pathways by which SES determines health; a comprehensive analysis must include macroeconomic contexts and social factors as well as more immediate social environments, individual psychological and behavioral factors, and biological predispositions and processes)

O.P. Aggarwal, S.K. Bhasin, A.K. Sharma, et al conducted a cross sectional community based study to develop a new scale for more accurate assessment of socio economic status families in India. By a process of random sampling, 2095 families in the National Capital Territory of Delhi were studied to find out their SES by using this scale. It was found that 31 families (1.5%) belonged to Upper high SES, 221 (10.5%) to High, 291 (14.2%) to Upper middle, 507 (24.2%) to Lower Middle, 745 (35.6%) to Poor and 294 (14.0%) belonged to Very Poor socioeconomic category. The instrument serves the purpose of categorizing the families in different socio-economic strata. However, it needs to be tested in other areas to determine its validity, reliability and utility.

Lipowicz A1, Kozieł S, Hulanicka B, Kowalisko A. (2007) observed that socioeconomic status (SES) is associated with frequency of cardiovascular disease. Both men and women of low socioeconomic position have increased risk of cardiovascular disease morbidity and premature death. In this study the relationship between SES in childhood, and health status at the age of 50 years was examined. Socioeconomic status in childhood was measured using objective (father's educational level and number of children in the family) and subjective (self-assessed SES in childhood declared in early adulthood) indicators. Data from the Wroclaw Growth Study were completed when subjects were 50 years old, and information concerning health status was added. The results indicated that the objective, universally used measures of SES in childhood such as father's educational level and size of family did not show any essential relationships with health outcomes in adulthood, both for men and women.

In 2014, Kader M1, Perera NK2 conducted a study to identify significant socio-economic and nutritional determinants associated with LBW in India. Family Health Survey-3 (NFHS-3) of India was analyzed. A total of 20,946 women (15-49 years) who gave birth at least once 5 years preceding the NFHS-3 were included in this study. Infant's LBW (<2500 grams) as outcome variable was examined in association with all independent predictors as infant's sex, maternal household wealth status, caste, age, education, body mass index (BMI), stature, anemia level, parity, inter-pregnancy interval, antenatal care received, and living place. Almost 20% of the infants were born with LBW. Mother's low education level, BMI <18.5, short stature (height <145 centimeters) and lack of antenatal visits (<4 visits) were significant predictors of LBW. Male gender has a protective effect against LBW. Maternal education, nutritional status and antenatal care received are key determinants that need to be addressed to reduce prevalence of LBW in India. Continue implementation of multifaceted health promotion interventions are

needed to address these factors effectively.

The commonly used available scales for measurement of socio-economic status (SES) with some cross regional applicability are old and have lost their relevance. There is a need for the development of a valid and reliable instrument for measurement of SES in rural and urban communities in India. The present study was undertaken to develop a cross regionally applicable scale for the purpose of enlisting true measures of socio-economic items applicable in multilingual, multicultural, multi religious, setting of the country. For developing the scale, seven indicators (house, materials possession, education, occupation, monthly income, land, social participation and understanding), presumably determining the socioeconomic status were selected. These indicators were named as profiles. Thus, initially the scale had seven profiles and every profile contained five alternatives. This instrument was prepared on a 10-point scale. Weightage system of scoring (varying from 2 to 10) was followed from first to sixth profile while the additive pattern of scoring was followed in seventh profile. The final version of the scale was arrived at through three trial administrations on rural and urban families. The basis of selection of the families for the first two trials was stratified random. The validity and reliability of the scale was established through a defined visual analogue scale (VAS) and test-retest methods. Both the initial version as well as the final version of the scale for the measurement of SES of incumbents had seven profiles. The difference between the two versions was in terms of contents and range of items in different categories of SES. The final version was arrived at through field trials and suggestions of the experts. The reliability of the scale was high with a correlation coefficient of 0.998.The new scale appears to be a valid and reliable instrument for the assessment of socio-economic status of the families/individuals from urban as well as rural areas in India Tiwari SC1, Kumar A, Kumar A. (2005)

Rahul Sharma and Narinder K. Saini (2014)., One of the scales widely used and quoted even today is the one developed by Kuppuswamy. The Kuppuswamy scale in its various forms has held steady over three decades now and is still widely used as a measure of socioeconomic status in the urban population. However, it is important to discuss the applicability in the changed modern scenario. This was necessitated as monetary inflation means the rupee does not retain the same value each year in terms of the goods/services that may be purchased with the same amount.[4] The revision is linked to the All India Average Consumer Price Index for Industrial Workers (CPI-IW).The Kuppuswamy scale has now been around for more than 3 decades. However, there may be certain shortcomings in its use and application that need to be discussed. Improvement in these possible lacunae is a priority area considering the wide use of the scale in published literature and in family health advisory postings in urban areas of medical undergraduate students.

Shankar Reddy Dudalal, Arlappa (2013)., suggested that it is imperative to understand the Socio-Economic Status (SES) of the community in order to correlate its impact on health and quality of living standards. Almost all community- based studies focus on socio-economic stratification, which is the key parameter for proper understanding the affordability of the

community of health services, amenities and their purchasing capacity. When it is taken as a summation of education, occupation and income, it reflects the value system expected for that level of education and occupation.

Several experts recommended different scales to measure the Socio-Economic Status in both rural and urban areas. However, Prasad's classification (1961) based on the per capita monthly income has been widely in use in India. It is computed as: Per capita monthly income = Total monthly income of the family/Total members of family.

The advantage with Prasad's classification is that it takes into consideration only the income as a variable and it is simple to calculate. This can be applied to assess the socio- economic status in both rural and urban areas. This classification was modified in 1968 [4] and 1970 [5] by Prasad BG. It was later modified by Kumar due to the inflationary trend in economy in 1993-94. An attempt has been made to link it with the all India consumer price index (AICPI) and a modified classification has been proposed with a built in provision of its upgrading from time to time to make it relevant and useful.

Correction Factor (CF) has been developed in relation to the base year of 1993-1994 as 4.93%, when the new series of the All India Consumer Price Index for Industrial Workers (AICPI) started [7]. The hypothetical value was calculated based on the concept of the cost-of-living index (COLI), which is pertaining to the existing Wholesale Price Index (WPI) in India.

As the COLI is not directly observable, the WPI employs a number of formulae that offer approximations to the measurement objectives. WPI uses the Laspeyres formula to average the price changes due to inflation across different categories of items, because COLI for the each current month is based on the cost of that month's market prices for the items used by the community. COLI changes due to inflation in wholesale price.

The Correction Factor should be multiplied with value of AICPI to get the multiplication factor and divided by 100. It is a simple method of multiplying the income limits of classification with a multiplication factor and rounding off the values to the nearest rupee. The next step is to multiply Prasad's income limits by the multiplication factor. AICPI for Industrial Workers (Base 1982 = 100) shows the current Price

Samuel P1, Antonisamy B, Raghupathy P, Richard J, Fall CH.(2012) examined associations between socio-economic status (SES) indicators and cardiovascular disease (CVD) risk factors among urban and rural South Indians. Data from a population-based birth cohort of 2218 men and women aged 26-32 years from Vellore, Tamilnadu were used. SES indicators included a household possessions score, attained education and paternal education. CVD risk factors included obesity, hypertension, impaired glucose tolerance or diabetes, plasma total cholesterol to high density lipoprotein (HDL) ratio and triglyceride levels and consumption of tobacco and alcohol. Multiple logistic regression analysis was used to assess associations between SES indicators and risk factors. Most risk factors were positively associated with possessions score in urban and rural men and women, except for tobacco use, which was negatively associated.

Trends were similar with the participants' own education and paternal education, though weaker and less consistent. In a concurrent analysis of all the three SES indicators, adjusted for gender and urban/rural residence, independent associations were observed only for the possessions score. Compared with those in the lowest fifth of the score, participants in the highest fifth had a higher risk of abdominal obesity [odds ratio (OR)=6.4, 95% CI 3.4 -11.6], high total cholesterol to HDL ratio (OR=2.4, 95% CI 1.6-3.5) and glucose intolerance (OR=2.8, 95% CI 1.9-4.1). Their tobacco use (OR=0.4, 95% CI 0.2-0.6) was lower. Except for hypertension and glucose intolerance, risk factors were higher in urban than rural participants independently of SES.In this young cohort of rural and urban south Indians, higher SES was associated with a more adverse CVD risk factor profile but lower tobacco use.

MATERIALS AND METHODS

This exploratory study was conducted in the rural and urban field in the month of March 2014. A total of 30 families were included in the study; of which 15 were from the rural setting (Sirumoor village) and 15from urban setting (vellore). The study subjects were the permanent residents of the area. The families were selected by using systematic random sampling technique (every 5th house). All sections of the society living in these areas were included. Those families who were cooperative and willing to participate were included in the study. The data was collected by interviewing the adult responsible respondent in the family.

For comparison of the scales, in the rural area two commonly used SES scales were applied on the same family at the same time one after the other by the investigator; viz. Prasad scale and the new scale. Similarly in urban areas two commonly used SES scales viz. Modified Kuppuswamy scale and the new scale were applied. The correction factor for Prasad and Modified Kuppuswamy classification were calculated by taking All India Consumer Price Index (AICPI) as on March 2014. The data was entered in Microsoft excel-2007 and the analysis was done using SPSS 16.0v. To measure the agreement between the scales, Spearman's rank correlation was applied.

RESULTS

In the present study 30 families were visited and interviewed; of which 15 were in rural and 15 in urban settings.

RURAL SETTING   **n = 15**

PRASAD SCALE	CLASS	NUMBERS & %	NEW SCALE	CLASS	NUMBERS & %
	I	9 (60%)		UPPER MIDDLE	8 (53.33%)
	II	3 (20 %)		LOWER MIDDLE	7 (46.66%)
	III	3 (20 %)			

URBAN SETTING   **n = 15**

KUPPUSAMY SCALE	CLASS	NUMBERS	NEW SCALE	CLASS	NUMBERS
	UPPER	5 (33.33%)		HIGH	5 (33.33 %)
	UPPER MIDDLE	10 (66.66 %)		UPPER MIDDLE	10 (66.66 %)

Among the 15 families surveyed at rural setting, it was observed from Table 1 that, majority 9 (60%) belonged to class I , 3 belonged to Class II and 3 to Class III (20%). When for the same families, the new scale was administered showed, majority of them (53.33%) belonged to Upper middle and 7 (46.66%) belonged to Lower middle class.

When the z scores of Prasad scale, Kuppusamy's scale for each household were compared with one way ANOVA there was no statistically significant difference observed (F = 0.071, P = 0.9).

From Table 4 in the urban setting, among the 15, 5 families were classified as high class in the new scale and as upper class in the Kuppusamy's scale, and 10 (66.66%) families belonged to upper middle class in both the scales which shows that there is high degree positive correlation between these two scales (R = 0.96, P = 0.9).

It is shown that in the urban setting (n=15), 10 belong to upper middle and 5 belong to upper scale in both the SES scale where as in the rural setting, 53 – 60 % belong to upper middle and 40 – 46.66 % belong to lower middle class. However due to small sample size the result cannot be generalized.

DISCUSSION

In the urban setting, both the scales measure the SES status of the families as same. So, Kuppusamy scale is found to be easy to administer as it includes only three main parameters and time consumption is less. New scale has 22 components but the status measured is same with the Kuppusamy's scale. Where as in the rural setting, the families belonged to either Class I, II or III when Prasad's scale was administered but the families belonged to Upper middle and lower middle only and no families belonged to upper middle or upper class. This should be focused. New scale seemed to be effective for use in rural setting compared to urban setting. Further study should be conducted with large sample to find the relevancy of the scale and to generalize the result.

CONCLUSION

The important determinant of the standard of living and health status is Socio-Economic Status of the individual/community. SES influences on the incidence and prevalence of various health related conditions. Socio- Economic Status also influences social security in terms of the accessibility, affordability, acceptability and actual utilization of various health facilities. Establishing a relevant scale to measure the SES is very essential to deliver the health care to all sector of people.

REFERENCES

1. Burns, N., & Groves, S. K., (2001). The Practice of Nursing Research - the conduct, critique & utilization (4th ed.). Philadelphia: W. B.Saunders.

2. Gupta, M. C., Mahajan,B, K., (2003). Textbook of Preventive and Social Medicine (10th ed), NewDelhi, Jaypee Brothers Medical Publishers.

3. Judith, A., & Barbara, W,S., "Community Health Nursing, Promoting and Protecting the Public's Health,(6th ed)". Philadelphia, Lippincott Williams & Wilkins.

4. Park, K., (2005). Preventive and social medicine (18th ed.).Banarsidhas Bhanot publishers, Jahalpur.

5. Polit, D. F., & Beck, C. T., (2004). "Nursing Research: Principles & Methods (7th ed.)". Philadelphia: Lippincott.

6. Kader, M1., & Perera, N. K2.,” Socio-economic and nutritional determinants of low birth weight in India”. Am J Med Sci. 2014 Jul;6(7):302-8.

7. Lipowicz, A1, Kozieł, S., Hulanicka, B., & Kowalisko “A Socioeconomic status during childhood and health status in adulthood: the Wrocław growth study”. Biosoc Sci. 2007 Jul;39(4):481-91.

8. Mishra, D., & Singh, H. P., “Kuppuswamy's socioeconomic status scale - a revision. Indian J Pediatr. 2003;70:273–4. [PubMed].

9. Aggarwal, O. P., Bhasin, S. K., Sharma, A. K., Chhabra, P., & Rajoura, O. P., “A New Instrument (Scale) for Measuring the Socioeconomic Status of a Family”: Preliminary Study Vol. 30, No. 4 (2005-10 - 2005-12).

10. Sunder, Rao, P. S., & Richard, J., (1999). An Introduction to Bio-Statistics – A Manual for students in health Sciences (3rd ed.). India: Prentice Hall.

11. Sharma, R., “Kuppuswamy's socioeconomic status scale - revision for 2011 and formula for real-time updating”. Indian J Pediatr. 2012;79:961–2. [PubMed]

12. Tiwari, S. C., & Ambrish Kumar., “ Updation of the scale to measure socio-economic status in urban & rural communities in India”. Indian J Med Res. Mar 2012; 135(3): 432–434.

13. Samuel, P1., Antonisamy, B., Raghupathy, P., & Richard, J., “ Socio-economic status and cardiovascular risk factors in rural and urban areas of Vellore, Tamilnadu, South India”. Int J Epidemiol. 2012 Oct;41(5):1315-27.

14. Sharma, R., “ Online interactive calculator for real-time update of the income subscale of Kuppuswamy's socioeconomic status scale”. [Last accessed on 2013 May 24]. Available from: http://www.scaleupdate.weebly.com .

15. Tiwari, SC1., & Kumar, A., “Development & standardization of a scale to measure socio-economic status in urban & rural communities in India”. Indian J Med Res. 2005 Oct;122(4):309-14.

16. Referred Web sites: http://labourbureau.nic.in/PressIW%20New%20series.htm
http://www.ijrdh.com/files/1%20Prasad%20SES.pdf
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3893998/table/T4/
http://prasadscaleupdate.weebly.com
http://scaleupdate.weebly.com