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## Socio-Economic Status Measurement Scale: Thirst Area With Changing Concept For Socio-Economic Status

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### **Abstract:**

*Background: socioeconomic status (SES) is an important determinant of health and it also influences actual utilization of various available health facilities. Society is not static social classes change over the time with changing concepts of SES.*

*Objectives: To develop and test a new Scale to measure SES*

*Methodology: A cross-sectional observational study was carried out in the year 2012 on 1155 families identified by stratified random technique. The proposed SES scale is having 7 items scoring each one from '0' to '7'. Applicability and reliability were tested 60 (5% of sampled population) families. Proposed SES scale was compared with VAS score scale for SES in 1155 families. Data collected were analysed and inferred with chi-square and correlation test.*

*Result: The proposed SES scale includes education, occupation, income per capita, expenditure, housing Condition, living status and debt to assets ratio. Applicability (96.67%), Reliability ( $r=0.93$ ) and validity ( $r=0.97$ ) of the proposed SES was found very high in the present study. Proposed SES scale determines SES classes almost in a similar way as with the VAS score with a little difference ( $P=0.431$ ) in Class III and Class IV.*

*Conclusion: The proposed SES scale includes the majority of the determinants of social class in a composite subjective manner. Applicability, Reliability and validity of the proposed SES was found very high. Proposed SES scale is able to discriminate families between different socioeconomic statuses. So this proposed scale is fit to use in community based study.*

**Key words:** socioeconomic status, Stratified random technique, Reliable, Valid

### **1.Introduction**

Socioeconomic status (SES) is a measure of an individual's or family's economic and social position in relation to others, based on various variables responsible for that like income, education, occupation, family effluence, physical assets, social position, social participation, caste, muscle power, political influence, etc.<sup>1</sup> Majority of researchers agree that income, education and occupation together best represent SES, while some others feel that changes in family structure, family effluence etc should also be considered.<sup>2</sup> Wealth is also considered a determinant of SES, which, is a set of economic reserves or assets, presents a source of security providing a measure of a household's ability to meet emergencies, absorb economic shocks, or provide the means to live comfortably. Wealth reflects intergenerational transitions as well as accumulation of income and savings.<sup>3,4</sup>

The socioeconomic status (SES) is an important determinant of health and nutritional status as well as of mortality and morbidity. Socioeconomic status also influences actual utilization of various available health facilities. There have been several attempts time to time to develop different scales to measure the socioeconomic status.

SES scales were developed mainly by psychologists especially in the western world.<sup>5,6,7</sup> In Indian studies, Prasad's classification of 1961<sup>8</sup> based on per capita monthly income and later modified in 1968<sup>9</sup> and 1970<sup>10</sup> has been extensively used. Another SES classification namely Kuppuswami scale<sup>11</sup> is widely used to measure the socio-economic status of an individual in urban communities. It is based on three variables namely education, occupation and income. Letter on modification of Kuppuswami scale<sup>12</sup> were done, where the education and occupation of head of the family and income per capita per month was used. Mishra et al<sup>13</sup> have suggested an economic revision of Kuppuswami.s scale. For the rural areas, Pareekh<sup>14</sup> classification became popular based on nine characteristics namely caste, occupation of family head, education of family head, level of social participation of family head, landholding, housing, farm power, material possessions and type of family. Recently, Tiwari et al<sup>15</sup> and Agrawal et al<sup>16</sup> develop a SES scale having much more variables responsible for socio-economic status. Tiwari et al<sup>15</sup> scale has seven indicators namely housing, material possession, education, occupation, monthly income, land, social participation and understanding. Agrawal et al<sup>16</sup> scale is questionnaire based, has

22 questions regarding various indicators of SES. Likewise, there are many SES scales, some are good for rural community but not for urban, some had considered limited determinants of SES and few are considering a number of similar determinants many times.

Socio-economic status (SES) is one of the most important variables in social science studies/researches. So there is a continuous need to develop a quite reliable, valid and applicable SES scale. It was felt that the currently available scales<sup>1-16</sup> were either outdated or there was a need to redefine and include much more relevant variables indicating the SES accurately. Moreover, these scales were developed for a particular type of population not applicable to larger representative cross-section of the community, (for example- Bharadwaj scale<sup>17</sup> on students Kuppaswami scale<sup>9</sup>, Srivastava scale<sup>18</sup>, and Jalota scale<sup>19</sup> on urban families; Pareek scale<sup>8</sup>, Shirpurkar scale<sup>20</sup> and Rahudkar scale<sup>21</sup> on farm families).

The present study was proposed to develop a new SES scale to measure the socio-economic status of the individual or family enlisting the majority of measure of socio-economic status of present era in a complied scientific manner. Furthermore, the proposed scale is more subjective and can be used for all sections of the society.

## 2. Materials And Methods

A questionnaire bases cross-sectional study was conducted to measure socio-economic status through a proposed SES scale on 1155 families of Jaipur city (Rajasthan) India in year 2012 with the following stages.

### 2.1. Formulation Of The Scale

Indicators of socio-economic status were enlisted with the help of available scales<sup>5-16</sup> and review of literature. The prepared list of SES indicators was submitted to public health experts, epidemiologist, psychologist, sociologist and economist to comment on the relevancy of those indicators in the present context. Although it was approved by public health experts, epidemiologist and psychologist with some minor modification, but sociologist and economist each of had suggested more variables. Economists suggest two more variables i.e. Expenditure as percentage of income spend and Debt to Asset Ratio whereas sociologists suggest Living Status. Revised scale with some alternatives was resubmitted to experts. This time there were 7 variables with each of 8 alternatives ultimately. Every alternative should be given the weighted score ranging from '0' to '7'. The weighted score for every alternative of the Item was determined on the basis of recommendation given by the experts, the experience of the researcher and the importance given in community. Thus, the 'Revised Draft of scale' was designed. All the experts were of the opinion that the scale is a useful, valid and reliable instrument and according to current need. Now it is given shape of 'final draft for proposed SES scale'

### 2.2. Pilot Study

Study was conducted in 60 families (5% of sample population) with this 'Revised draft of scale' on stratified random basis. In course of administration of this scale applicability and reliability was seen. It was found applicable and reliable so the final draft of the scale was developed for measuring SES.

### 2.3. Proposed Socioeconomic Scale Description

This scale has seven variables to assess the socio-economic status namely education, occupation, income per capita, expenditure, housing condition, living status and debt to assets ratio. Education is the highest standard class studied. Occupation is means to earn livelihood. Income refers to wages, salaries, profits, rents and any flow of earnings received. Income is linked with All India Consumer Price Index (AICPI) to make it compatible in measuring the SES over the years with fast growing economy. Values in present SES is as per AICPI April 2012 (i.e. 4680 AICPIW base year 1960)/949 (base year 1982)/205 (base year 2001). In case of living status and Housing condition scoring is done for different variables related respectively. To find out the final scoring of living status and housing condition, total scoring is divided into eight equal parts to get further scoring '0' to '7'.

This SES scale has rule of seven i.e. seven variables with '0' to '7' scoring of each variable. Scoring is done for each of these seven variables from 0 to 7, where '0' is the lowest category whereas '7' is the highest category. So, the equal weightage is given to all the seven variables related to socio-economic status. (Annexure)

### 2.4. Visual Analogue Scale (VAS) Ratings For SES

VAS is a horizontal scale and is divided into five sections which indicate five different SES class of the scale as Class I (Upper), Class II (Upper-middle), Class III ( Middle), Class IV (Lower-middle), and Class V (Lower). In this method, the interviewer has to rate the SES of the family based on his/her observations, discretion and judgment.

### 2.5. Method

One thousand one hundred and fifty five (1155) families were identified on the basis of stratified random sampling method i.e. 15 families from each of 77 wards of Jaipur city. In each of selected house, firstly, SES was assessed by visual analogue scale (VAS) done by the interviewer then this finally developed draft of Socioeconomic Scale was administered on head of each of 1155 families. At the end, the two ratings i.e., rating of this new SES scale and VAS rating given by the interviewer were matched for each selected family.

### 2.6. Testing Of Proposed Socioeconomic Scale

Adequate questionnaire/scale construction is crucial. A useful method for checking a questionnaire/scale and making sure whether it is accurately capturing the intended information is to pretest the 'reliability' and 'validity' of the questionnaire. So, this proposed SES scale was tested in terms of reliability and validity.

### 2.7. Reliability

The reliability of the scale was determined by test-retest method<sup>22</sup>. This proposed SES scale was administered to a sample of 60 families (5% of sample population) and compiling their respective scores. After one month, it was again re-administered on the same sample. and scores are noted again. The two series of scores are arranged pair-wise, a pair being the scores of the candidate in two repetition of the test. Karl- Pearson's coefficient of co-relation between the two series is taken as the measurement of reliability<sup>22</sup>.

### 2.8. Validity

The content validity was tested of proposed SES scale by opinion of subject experts. It was again observed in relation to VAS score for SES.

### 2.9. Correlation With VAS

SES by VAS score of the each of the family is matched with SES by this proposed SES scale of head of respective family. The two series of scores are arranged pair-wise. Karl- Pearson's coefficient of co-relation between the two series is taken as the measurement of reliability<sup>22</sup>.

## 3. Results

The proposed SES scale include 7 variables namely education, occupation, income, expenditure, housing condition and living status. For applicability and reliabilities the proposed SES scale was administered to 60 families (5% of sample population) identified on stratified random sample and for validity it was administered to 1155 families identified on stratified random sample for correlation with SES by VAS.

Out of total of 60 families (5% of sample population), it was not found applicable in only two families, in which hesitation was observed either regarding expenditure or debt to asset ratio. So applicability was observed 96.67%.

In the present study, reliability for the proposed SES scale was observed very high ( $r=0.93$ ) by test re-test method done on 60 families. There was a total agreement between the resource persons in respect of the criterion validity of the proposed SES in the present study. According to this proposed SES scale 11.69%, 15.58%, 24.85, 34.72% and 13.16% were found in Class I (High Class), Class II (Upper Middle Class), Class III (Middle Class), Class IV (Lower Middle Class) and Class V (Lower Class) respectively. When the proposed SES scale was correlated with VAS score for SES, it was found that correlation was also observed very high ( $r=0.97$ ). Out of total 1155 families, there was a total agreement between both the SES scales in 1051 families. Among 104 families where the opinions differed about the SES category of the families from VAS scale, the difference was of only one class (up or down) and that is to in class III (24.85% v/s 27.97%) and class IV (34.72% v/s 31.6%), which was not significant ( $p=0.431$ ).

## 4. Discussion

The proposed SES scale includes 7 variables namely education, occupation, income, expenditure, housing condition and living status. Cattell<sup>5</sup> SES scale has five definers of social status namely prestige rating, intelligence quotient, income (annual), years of education and occupations. Warner et al<sup>6</sup> used two methods called evaluated participation and index of status characteristics, in which index of Status Characteristics used occupation, source of income, house type and dwelling area. Hollingshed et al<sup>7</sup> used three indicators namely residential address, occupational position of its head and the years of school the head of the family had completed. In Indian studies, Prasad's classification of 1961<sup>8</sup> was based on per capita monthly income only. Another SES classification namely Kuppuswami scale<sup>11</sup> was based on three variables namely education, occupation and income. Pareekh<sup>14</sup> classification is based on nine characteristics namely caste, occupation of family head, education of family head, level of social participation of family head, landholding, housing, farm power, material possessions and type of family. Tiwari et al<sup>15</sup> scale has seven indicators namely housing, material possession, education, occupation, monthly income, land, social participation and understanding. Agrawal et al<sup>16</sup> scale is questionnaire based, has 22 questions regarding various indicators of SES.

Most of the authors<sup>5,6,7,12,14,15</sup> had included education, occupation, income in their SES scale. But in contrast to this Prasad's<sup>8</sup> SES is based on only income. Although income is most common measure and focus on meeting immediate needs but living status and housing condition, which are also reflection of social class may not influenced with only income. Income is not appropriate as a single indicator of social class. For example, a sanitation worker will often earn more than a teacher, although the teacher has more education and would be considered to have higher status.

SES is not only determined with income, education and occupation, income but expenditure, housing condition and living status should also be included to find out SES of a family. Few of the authors<sup>14,16</sup> included much more variables but then proforma became complex. A home/family affluence scale composed of material items was also found an indicator of SES.<sup>23,24</sup> This proposed SES scale includes majority of the determinants of social class in a composite subjective manner.

Applicability of proposed SES scale was found 96.67%. Although it is lesser than Prasad's<sup>8</sup> and Kuppuswami's<sup>11</sup> SES scale but is more than others<sup>14,16</sup> and quite high to use it in the field.

Reliability of the proposed SES scale was observed very high ( $r=0.93$ ) by test re-test method and there was almost total agreement between the resource persons in respect of the content validity. Almost similar observation were of other authors like Pareek's (0.93)<sup>14</sup>, Warner's (0.91)<sup>6</sup> etc. Validity of the proposed SES scale (0.97) was observed more than prevalent SES scales<sup>8,9</sup>

When the proposed SES scale was correlated with VAS score for SES, it was found that correlation was also observed very high ( $r=0.97$ ). Out of total 1155 families, there was a total agreement between both the SES scales in 1051 families. Among 104 families where the opinions differed about the SES category of the families from VAS scale, the difference was of only one class (up or down) and that is to in class II and class III. So this proposed scale is fit to use in community based study.

If initial two classes of Agrawal et al's<sup>15</sup> make together as Class I (Upper Class), then observations of Agrawal et al's<sup>15</sup> were almost similar to the findings of proposed SES scale in present study i.e. Class I (12% v/s 11.69%), Class II (14.2%, v/s 15.58%), Class III (24.2% v/s 24.85%), Class IV (35.6% v/s 34.72%) and Class V (14% v/s 13.16%).

### 5. Conclusion

The proposed SES scale includes majority of the determinants of social class in a composite subjective manner. Applicability, Reliability and validity of the proposed SES was found very high in the present study. Proposed SES scale is able to discriminate families between Class I (High Class), Class II (Upper Middle Class), Class III (Middle Class), Class IV (Lower Middle Class) and Class V (Lower Class). So this proposed scale is fit to use in community based study.

### Annexure: New Socio-Economic Status

Education:		Scores
Illiterate		0
Primary		1
Middle		2
High School		3
Intermediate		4
B.A/B.Sc/B.Com /Equilent		5
M.A/M.SC/M.Com/Equilent		6
Professional		7

Occupation:	Scores
Unemployment	0
Unskilled Worker	1
Semi-skilled worker	2
Skilled Worker	3
Clerk/Farmers/Shopkeepers	4
Semiprofessionals	5
Professionals	6
Corporate CMD/Chairman	7

@Income per Capita per Month: (In Rupees as per CPI April 2012)	Scores
<1000	0
1,000 to 4,999	1
5,000 to 9,999	2
10,000 to 14,999	3
15,000 to 19,999	4
20,000 to 24,999	5
25,000 to 29,999	6
30,000 and above	7

Expenditure:	Scores
< 10% of Income	0
10% to 19% of Income	1
20% to 29% of Income	2
30% to 39% of Income	3
40% to 49% of Income	4
50% to 59% of Income	5
60% to 69% of Income	6
70% and above	7

Figure 1

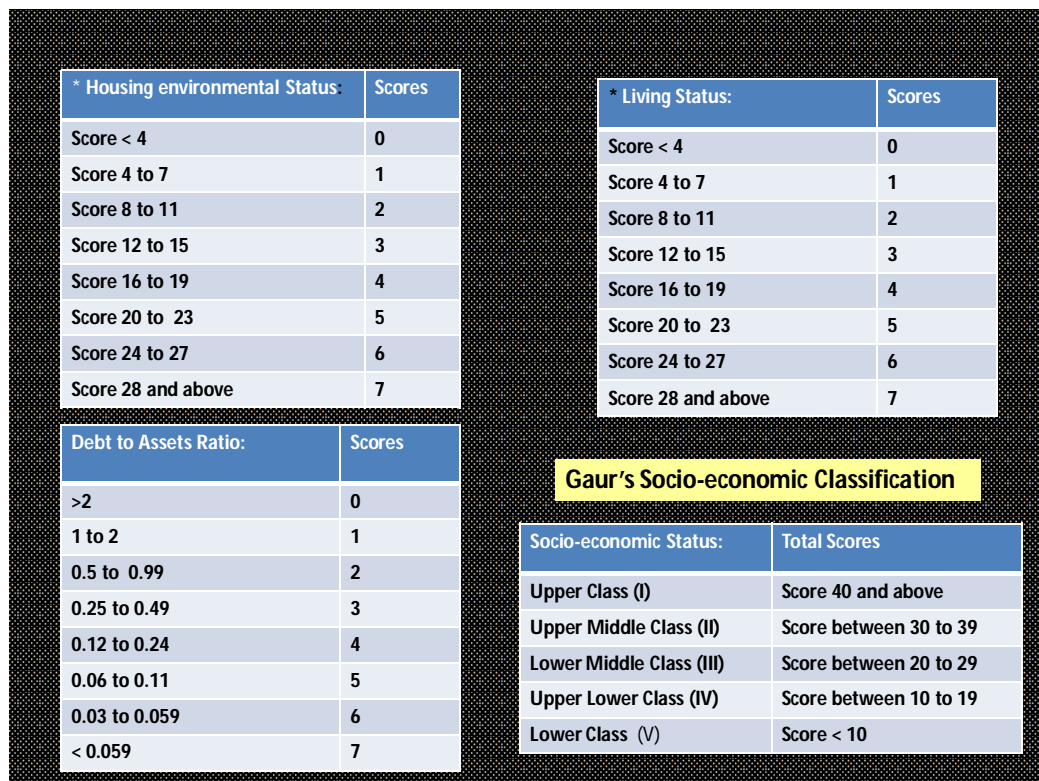


Figure 2

(©Income Per Capita Is Linked With AICPI (April 2012 AICPI IW Is Rs. 205 (Base Year 2001))

\*Scoring for living status and housing condition is as follows:-

#### Housing condition

	Score
Site: Bad / Fair / Good	0/1/2
Setback : No / Improper / Proper	0/1/2
Floor: Kucha/ Pukka with crevices/ Pukka without crevices	0/1/2
Walls: Kucha/ Pukka with crevices/ Pukka without crevices	0/1/2
Roof: Kucha/ Pukka with crevices/ Pukka without crevices	0/1/2
Height: Inadequate / Adequate	0/1
*Overcrowding: Present / Absent	0/1
**Light: Inadequate / Adequate	0/1
Kitchen -not separate / separate but without smoke outlet / separate with smoke outlet	0/1/2
Storage facility- Improper / Proper	0/1
Drainage facility - Improper / Proper	0/1
Privy - open air defecation / Private Service / Public sanitary / Private sanitary	0/1/2/3
Water supply - Surface / Well / Tape Water/Tub well or treated Tape water	0/1/2/3
Bath-room- Improper / Proper	0/1
Domestic animals- Not separate / Separate	0/1
Refuse disposal- Improper / Proper	0/1
Drainage - Improper / Proper	0/1
Environmental Total score obtained -----	

[\*Overcrowding present if floor space /person is less than 50 feet<sup>2</sup> along with Sex separation

\*\* One can read newspaper in any corner of house is adequate lighting]

Living Status:	Scores
*City: No/Category C/ Category B/ Category A	0/1/2/3
*Locality: No/Category C/ Category B/ Category A	0/1/2/3
Accommodation (BHK): 0/1/2/3/>3	0/1/2/3/4
Conveyance: No/Cycle/Two wheeler /Four Wheeler	0/1/2/3/4
Communication: No/News Papers/Mobile	0/1/2/3
Audio-visual: No/Radio/Television/Computer/Laptop	0/1/2/3/4
Mechanical Ventilation: No/Fan/Cooler/Air Condition	0/1/2/3
**Modern Amenities: 0/1/2/3/>3	0/1/2/3/4
*Children's School: No/Category C/ Category B/ Category A	0/1/2/3
*Club Membership: No/Category C/ Category B/ Category A	0/1/2/3

Total Scores Gained .....

- \*Categories as per predefined criteria by the Government.  
 \*\*Number of modern amenities other than included already.

Socioeconomic class	Total Scores Gained
Class I	40 and above
Class II	30 – 39
Class III	20 – 29
Class IV	10 – 19
Class V	< 10

Table 1: Socio-Economic Group Is Divided Into Five Classes As Per Total Score Gained By Gaur's SES Scale As Follows

The reliability of the scale was found to be very high ( $r = 0.93$ ).

S. No.	Socio-economic Status	Proposed SES Scale		SES by VAS Scale	
		No.	%	No.	%
1	Class I	135	11.69	135	11.69
2	Class II	180	15.58	180	15.58
3	Class III	287	24.85	323	27.97
4	Class IV	401	34.72	365	31.6
5	Class V	152	13.16	152	13.16
6	Total	1155	100	1155	100

Table 2: Correlation Of Proposed SES Scale And VAS Score For SES  
 Chi-Square Test = 3.816 At 4 DF  $P=0.431$   $LS=NS$   $R=0.97$

S. No.	Tests	Proposed SES Scale	Remark
1	Applicability	96.67%	Very High
2	Validity	100%	Very High
3	Reliability	0.93	Very High
4	Agreement with VAS Score for SES	0.97	Very High

Table 3: Test Of Proposed SES Scale

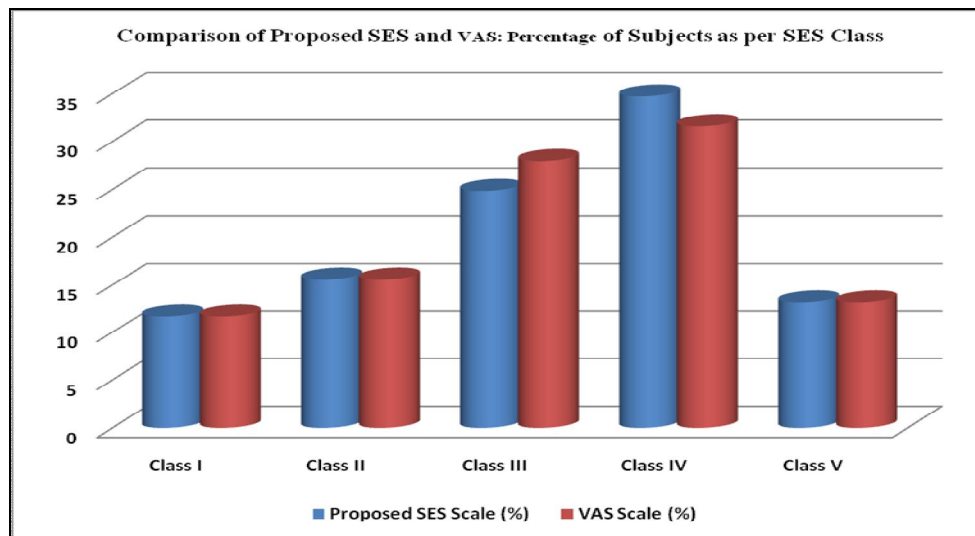


Figure 3

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