SHORT ARTICLE

Revised Prasad and Kuppuswamy socioeconomic scales for India in 2024: Methods and Updates

Absar Ahmad[1], Nafis Faizi[2], Nazneen Aiman Siddiqui[3]

[1,2]Department of Community Medicine, Jawaharlal Nehru Medical College & Hospital, Aligarh Muslim University (AMU), Aligarh, Uttar Pradesh

[3]Department of Moalejat, Aligarh Unani Medical College and ACN Hospital, Aligarh, Uttar Pradesh

CORRESPONDING AUTHOR

Dr. Nafis Faizi, Assistant Professor, Department of Community Medicine, Jawaharlal Nehru Medical College, AMU, Aligarh, India 202002

Email: nafisfaizi@gmail.com

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Abstract

Socioeconomic scales are vital to public health research to measure associations and impacts on health. BG Prasad classification and the Kuppuswamy scales are two commonly used socio-economic scales for India as they are cost-effective and efficient. While BG Prasad classification is based on per capita family income, Kuppuswamy also measures education and occupation of the family head in addition to monthly family income. Since income is a dynamic entity affected by economic changes such as inflation and cost of consumption, there is a need to update the Prasad and Kuppuswamy classification. This research updates both the classifications as per the latest consumer price index values for January 2024. The research also discussed the steps to update the classifications for future use.

Keywords

Socio-Economic Scale; Prasad Classification; Kuppuswamy Classification

Introduction

Socio-economic status (SES) measures an individual's status and position, reflecting their standard of living. SES also impacts access to resources, including resources to promote, maintain, and improve health, as well as the capacity to withstand periods of ill-health. Due to its critical influence on nutrition, behaviour, and lifestyle, it is considered an important indicator of population and public health. (1,2) SES can be gauged through different social factors. Social factors measurable at individual levels are race/ ethnicity, gender, education attainment, family income, household wealth or asset, occupation, discriminatory variables such as caste, and positive variables such as family/social support. Social factors measurable at aggregate levels are deprivation, segregation, economic inequality, and social capital. (3) Two distinct viewpoints explain the relation between SES and health: Social causation theory and health selective theory. Social causation theory posits that SED is the main cause of health inequality, whereas health selective theory posits that healthy people tend to move upwards and are in the higher SES.(4) Lower socioeconomic status

people account for a higher burden of poor health as compared to higher socioeconomic status people.(5) SES measures are useful in analyzing not only the socio-economic distribution of a disease but also to track - changes within or across geographies and inform health policy.(6) Therefore, most research in community or public health measures SES to analyze its impact as an independent variable on any health outcome.(7) Most SES measures used today are built on the foundational ideas about the attributes of social class laid down by Karl Marx, Max Weber, and other sociologists. While Marx posited that the social class of a person is predominantly defined through their relationship to the means of production (such as factories and land) giving value to income/capital, Weber proposed that society is hierarchically stratified along numerous dimensions such as property, power, and status in the society, resulting in groups whose members have similar life prospects and a common position. (8)

In India, two commonly used SES scales in community research are the BG Prasad and the Kuppuswamy scales, as both of them are easy to understand, measure, and apply. Whereas the BG Prasad classification is based on family income, Kuppuswamy also measures education and occupation. Modified BG Prasad is used in both rural and urban areas. Despite being developed initially for urban regions, the Kuppuswamy scale is now used in both urban and rural settings. (2) However, income is a dynamic entity, and both scales are affected by economic changes such as inflation and cost of consumption. Hence, there is an extant need for constant updating to reflect the impact of the exact economic situation. This research aims to update the modified BG Prasad and Kuppuswamy scale up to the month of January 2024 and explain the steps in doing so.

BG Prasad socioeconomic scale

This scale was developed by Brahm Govind Prasad in 1961, who was the founder, visionary, and first head of the Department of Community Medicine, KGMU. It is based on only one domain, which is per capita income. Due to its simplicity and ease of understanding, it remains the most commonly used classification for early-stage researchers. It was developed considering the base of the consumer price index for industrial workers (CPI-IW) for 1960 as 100. CPI-IW is updated regularly by the government, and the last CPI-IW was published for January 2024. (9)

Consumer Price Index (CPI)

Consumer price index for industrial workers (CPI IW) indices track how retail prices for a set basket of products and services consumed by industrial workers change over time. Millions of workers and employees nationwide have their pay and dearness allowance regulated by the CPI IW. These measures are also employed for the measurement of inflation and impact different policy formulations of the government. (10)

The history of CPI IW's upkeep dates back to the First World War, when rising product prices caused workers' economic conditions to deteriorate. Consequent to this price rise and rise in living cost, several provincial governments started conducting family budget surveys and compilations of CPI IW in their areas. On the advice of the Rau Court of Enquiry, the central government began the process of compiling and maintaining the CPI IW in 1941. (10) Later, the Labour Bureau successfully established a consistent and scientific method of compiling index numbers through Family Living Surveys, an office under the Ministry of Labour and Employment in 1958. (10) Since then, it is regularly updated. The initial CPI IW used in both Prasad and Kuppuswamy classifications recognizes the base year CPI IW in 1960 =100. The base year set by the Labour Bureau is updated from time to time. With the release of the October 1988 index, the new base year (1982 = 100) took place of the previous base year (1960 = 100) in December 1988. This was superseded by the new series on base 2001 = 100, which was launched on March 9, 2006, with an index from January 2006. The latest base year (2016 = 100) was changed in October 2020. The CPI IW also evolved from the IW of workers from factories, mines and plantations only to a wider

coverage, including seven sectors: (a) factories, b) plantations, c) mines, d) railways, e) public motor transport undertakings, f) establishments of electricity generation and distribution and g) ports and docks. (10) Currently, the CPI IW is being compiled monthly on the basis of retail prices from 317 markets in the country spread over 88 industrially important. All India, the index is compiled for 88 centres and is released on the last working day of the succeeding month. The All-India CPI-IW for the month of January 2024 was 138.9.(11) The modified BG Prasad classification is based on per capita income, and income classification is totally based on CPI IW. Hence, the need for an update.

Steps to update income-based classification for Prasad classification

Step 1. Calculating the new income as per latest levels since the original base year 1960.

New Income	=	Multiplication factor as per current CPI	*	Old Income	*	Linking factor for 1960-1982	*	Linking factor for 1982-2001	*	Linking factor for 2001-2016

Step 2. Obtaining the linking factors from labour bureau of India (9)

Linking factor for 1960 - 1982 = 4.63
Linking factor for 1982 - 2001 = 4.93
Linking factor for 2001 - 2016 = 2.88

Step 3. Calculating Multiplication factor as per current CPI

$$\text{Multiplication factor} = \frac{\text{Current CPI of that month}}{\text{Base index value in 2016}}$$

Current CPI-IW for January 2024 is 138.9, and old per capita is 100 (base index).

Step 4. Calculating new income based on formula:

New Income	=	Multiplication factor as per current CPI	*	Old Income	*	Linking factor for 1960-1982	*	Linking factor for 1982-2001	*	Linking factor for 2001-2016
New Income calculation	=	138.9 / 100	*	100	*	4.63	*	4.93	*	2.88
	=	9131								

Step 5. Calculating the five classes of Modified BG Prasad Classification

Thus, the social class I, II, III, IV and V are calculated for 2024 as per the original classification (Table 1). The lower limits must be preferred to categorise the scales.

In simple terms the new income for each category can be calculated by using this formula

New income = Income as per 1961 * CPI of that month or year * 0.6574

However, this formula would be valid until the new economic base year is set.

Table 1 Modified BG Prasad classification for 2024

Social scale	Per-capita income in (₹) as per classification of 1961	Per-capita income in (₹) as per modified classification for 2024
I	≥100	≥9131
II	50-99	4566-9040 (up to 9130)
III	30-49	2739-4474 (up to 4565)
IV	15-29	1370-2648 (up to 2738)
V	<15	<1370

Modified Kuppuswamy socioeconomic scale

The original Kuppuswamy scale was developed by Kuppuswamy in 1976, assuming the base year as 1960. The scale is based on three domains: education of the family head, occupation of the head of family and monthly

family income (MFI). These three domains add up to a total score of 3-29 which further categorizes the population into five socio-economic classes. Among the three domains, education and the occupation of the family head remain static, but monthly family income fluctuates with the change in income as per inflation and price changes. As monthly family income is calculated based on the Consumer Price Index – Industrial Workers (CPI IW), the income domain should be revised as per the latest updates. The income category today will be based on the original Kuppuswamy incomes for 1976, projecting as to how much income today will be equivalent to Kuppuswamy 1976 values. Based on the education of the family head, Kuppuswamy assigns a score ranging from 1 for illiteracy to 7 for post-graduate or professional degrees (Table 3). Similarly, based on the family head's occupation, Kuppuswamy assigns an occupation category, with scores ranging from 1 for unemployed to 10 for professional workers (Table 3).

Steps to update income-based classification for Kuppuswamy classification

Step 1. Updating with respect to last base year

$$\text{CPI for current year with respect to last base year} = \frac{\text{Price in current year}}{\text{Price in last base year}} * 100$$

Substituting Price with Monthly Family Income (MFI),

$$\text{CPI for current year with respect to last base year} = \frac{\text{MFI in current year}}{\text{MFI in last base year}} * 100$$

As mentioned earlier, the base year is defined by the Labour and Employment Ministry and changes from time to time; therefore, it cannot be chosen randomly or at will. When there is a change in the base year, the CPI for consecutive months and years is calculated using the new base year. The base year was lastly changed in October 2020 as 2016. In the past, the base years were 1960, 1982, 2001. For the sake of brevity, we will denote the CPI for the current year with respect to the base year as: CPI current year $_{\text{base year}}$ and MFI in current year/MFI in base year as: MFI current year/base year. Thus, for 2024, the CPI calculations would be

$$\text{CPI } 2024_{2016} = \text{MFI } 2024/2016 * 100$$

Subsequently, this has to be calculated as per every base year since the original calculations by Kuppuswamy. Thus, the CPI for other years need to be found as well:

CPI 2016_{2001} = MFI 2016 /2001 * 100, CPI 2001_{1982} = MFI 2001/1982 * 100, and CPI 1982_{1960} = MFI 1982/1960 * 100.

Step 2. Adjusting base years with respect to original Kuppuswamy scale

Since the original classification was given in 1976 based on base year 1960, it must be adjusted.

Since, CPI 1982_{1960} = MFI 1982/1960 * 100 and CPI 1976_{1960} = MFI 1976/1960 * 100.

To calculate income in 1982 (based on 1976 classification), the CPI 1982_{1960} must be divided by CPI 1976_{1960}. This cancels out the MFI 1960 values (denominators) and adjusts to the original Kuppuswamy scale. In other words,

$$\text{Income in 1982} = \frac{\text{CPI } 1982_{1960}}{\text{CPI } 1976_{1960}} * \text{Original income stated for 1976}$$

Step 3. Calculating latest incomes for original Kuppuswamy scale

$$\text{New Income for 2024} = \text{Original income} * \frac{\text{CPI}2024_{2016}}{100} * \frac{\text{CPI } 2016_{2001}}{100} * \frac{\text{CPI } \frac{2001}{1982}}{100} * \frac{\text{CPI } 1982_{1960}}{\text{CPI } 1976_{1960}}$$

$$\text{New Income for 2024} = ₹\ 2000 * \frac{138.9}{100} * \frac{274.3}{100} * \frac{458}{100} * \frac{490}{296.4}$$

$$= \underline{57{,}584}$$

Step 4. Calculating the five classes of Modified Kuppuswamy Classification

Thus, the social class I, II, III, IV and V are calculated for 2024 as per the original classification (Table 2) along with education and occupation categories and overall scoring.

In simple terms the new income for each category can be calculated by using this formula

New income = Income as per 1976 * CPI of that month or year * 0.2073

However, this formula would be valid until the new economic base year is set.

Table 2 Updated Income categories for Kuppuswamy scale

S. No.	Original Kuppuswamy classification (1976)		Economic base year is changed from time to time with change in economic structure of the country			Current Income classification
	Based on base year 1960		Economic base year changed in 1982, 2001 and 2016			Adjusted for
	Scores	Income category	1982	2001	2016	January 2024
1.	12	≥ 2,000	≥ 3,300	≥ 15,114	≥ 41,458	≥ 57,584
2.	10	1,000 – 1,999	1,650 – 3,299	7,557 – 15,106	20,729 – 41,437	28,792 – 57,556
3.	6	750 – 999	1,238 – 1,649	5,668 – 7,550	15,547 – 20,708	21,594 – 28,764
4.	4	500 – 749	825 – 1,236	3,779 – 5,660	10,365 – 15,526	14,396 – 21,566
5.	3	300 – 499	495 – 823	2,267 – 3,771	6,219 – 10,344	8,638 – 14,367
6.	2	101 - 299	167 – 493	763 – 2,260	2,094 – 6,198	2,908 – 8,609
7.	1	≤ 100	≤ 165	≤ 756	≤ 2,073	≤ 2879

Table 3 Education & occupation of head of family and Socioeconomic category for Kuppuswamy scale

Education of family head		Occupation of family head		Overall Socioeconomic status (Income+ Education+ Occupation)	
Scores	Category	Scores	Category	Total score	Socioeconomic category
7	Post-graduate or professional degree	10	Professional	26-29	Upper class
				16-25	Upper middle class
6	Graduate degree	6	Semi Professional		
5	Intermediate	5	Shopkeeper/ clerk/ Arithmetic skill jobs	11-15	Middle class
4	High school	4	Skilled worker	5-10	Lower middle class
3	Middle school	3	Semi-skilled worker		
2	Literate less than middle school certificate	2	Unskilled worker	<5	Lower class
1	Illiterate	1	Unemployed		

Conclusion

The updation of income as per current values is of paramount importance while assessing socio-economic status through the most commonly used Indian scales- Kuppuswamy and Prasad classification. With the original categories updated for Modified Prasad classification as per the current income scales, the social class may now be useful as ordinal variable in health research. With the update in income-based scores, the Kuppuswamy classification allows researchers to use the total scores to create their own quartile-based groups for analysis as independent variables.

Authors Contribution

All author have contributed equally.

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Conflict of Interest

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