Original Article

Coherence between Existing System of Defining Urban Poor with Kuppuswamy and Hashim's System; Which is More Relevant?

Sanjivani Vishwanath Patil, Sudhanshu Ashok Mahajan, Prakash Prabhakarrao Doke, Jayashree Sachin Gothankar

Department of Community Medicine, Bharati Vidyapeeth Deemed to be University Medical College, Pune, Maharashtra, India

Abstract

Background: Identification of below poverty line (BPL) households is of paramount importance to provide benefits under poverty alleviation and other programs. **Objectives:** (1) To assess households in urban slums in terms of housing, assets, and amenities. (2) To compare three different systems of socioeconomic status (SES) – ration card holders, Modified Kuppuswamy Scale, and Hashim's system. **Materials and Methods:** A cross-sectional, community-based study was conducted in urban slums of field practice area of a medical college, Pune. Considering 35% of urban households in India qualify as poor, sample size of 593 households was calculated. A predesigned, validated, pretested questionnaire was used, covering sociodemographic domains including indicators of three systems. Agreement between these scales was calculated by kappa statistics. **Results:** Total 639 households were surveyed covering 3078 slum population. Percentage of BPL families according to possession of yellow ration card, Modified Kuppuswamy Scale, and Hashim's system were 35.99%, 48.67%, and 48.51%, respectively. The proportion of agreement between Kuppuswamy scale and ration card was 55.71% and for Hashim system and ration card was 51.79%. **Conclusions:** The present study revealed no agreement between these three systems. Hashim system gives more accurate and realistic picture of SES of the urban slums households owing to its holistic approach.

Keywords: Below poverty line, Hashim's system, ration card, slums, socioeconomic status

Introduction

India has the world's second largest urban population. Rapid urban growth with inadequate infrastructure development resulted in slums. Slums are the results of failed policies, bad governance, corruption, inappropriate regulation, dysfunctional land markets, unresponsive financial systems, and lack of political will.[1]

Socioeconomic status (SES) is one of the important determinants of health. It influences the accessibility, affordability, and actual utilization of available health services.[2] Identification of below poverty line (BPL) families is essential to find actual beneficiaries for poverty alleviation programs and various health schemes. Various tools are available for the identification of BPL families by applying appropriate SES scales including ration card issued through public distribution system.

Pune city being educational, information technology, and industrial hub, many migrants from different parts of India are attracted toward city. Most of them fall in the category of lower strata forming the poor or low-income group. As per the Socio Economic and Caste Census (SECC) 2011, 34.96% households were included in BPL category.[3] As per Pune City Sanitation Plan-2011, nearly 40% of Pune's population lives in slums.[4]

Estimation of the prevalence of BPL households is essential, as benefits provided to these families account for major part of national and state government expenditures. Prevalent SES scales include Modified Kuppuswamy Scale based on education, occupation of head of family, and family income. To ensure

Access this article online

Quick Response Code:

Website: www.ijcm.org.in

DOI: 10.4103/ijcm.IJCM_912_20

Address for correspondence: Dr. Sudhanshu Ashok Mahajan, Department of Community Medicine, Bharati Vidyapeeth (DTU) Medical College, Pune-411043, Maharashtra, India.
E-mail: sudhavaibhav1311@gmail.com

How to cite this article: Patil SV, Mahajan SA, Doke PP, Gothankar JS. Coherence between existing system of defining urban poor with Kuppuswamy and Hashim's system; Which is more relevant? Indian J Community Med 2021;46:489-93.

Received: 20-10-20, **Accepted:** 22-04-21, **Published:** 13-10-21

objectivity and transparency in identifying BPL households in urban slums, the Planning Commission constituted an Expert Group under the Chairmanship of Professor S.R. Hashim. Very few studies related to socioeconomic conditions using different scales of urban slums in Pune are available. Against this background, the present study was conducted to assess households in urban slums in terms of housing/dwelling, assets, and amenities and to compare between three different systems – ration card holders, Modified Kuppuswamy Scale, and Hashim's system.

Materials and Methods

A cross-sectional, community-based study was conducted in selected urban slum households under field practice area of urban health training center of medical college, Pune, for a period of 6 months. The population of the Pune city is 3,124,458 as per Census 2011,[5] possessing total 14 wards covering 564 slums. The urban health training center gives health-related services to three wards covering approximately 36,500 slum population.

Considering 35% of urban households in India qualify as poor (SECC 2011), a 95% confidence interval and acceptable error of 12%, sample size of 593 households was calculated which included 15% nonresponse rate. In the first stage of sampling, one ward of field practice area was randomly selected. In the second stage, the selected ward was stratified into four distinct geographical areas. The households were selected from each stratum proportionate to its population.

Institutional Ethical Committee Approval was obtained. The respondent was head of family or in his/her absence, any adult (>18 years) member present in the house at the time of data collection. A house-to-house survey was conducted by interview technique in local language. The purpose of study was explained to the respondents, and informed consent was obtained. The respondents were assured that their confidentiality would be maintained and ethical principles would be followed. Those who were not willing to participate, households whose doors were locked on 2 consequent visits, or those where the head of family/adult respondents not available at the time of data collection were excluded from the study.

Predesigned, validated, and pretested pro forma was used for data collection. The survey pro forma covered various sociodemographic domains including education, occupation, income (Kuppuswamy scale), availability of ration card, and various indicators suggested by Hashim's report.[6] Hashim's report recommended a three-stage BPL identification process: (i) automatic exclusion; (ii) automatic inclusion; and (iii) a scoring index. In the first stage, a household fulfilling any of the indicators given in "Stage 1" was automatically excluded from the BPL list. The remaining households were screened for automatic inclusion as per the criteria set in "Stage 2." The residual households were then assigned scores from 0 to 12 based on the scoring pattern given in "Stage 3." The correction factor for Modified Kuppuswamy classification was calculated by taking All-India Consumer Price Index as on 2017.[7] The households were classified as BPL and non-BPL based on yellow ration card, Kuppuswamy, and Hashim system. After data entry, random verification of entries was done to ascertain the correctness of data. Proportions and percentages were calculated. Statistical analysis was done by SPSS software version 25 (IBM SPSS inc. Chicago USA). To measure the agreement between the scales, kappa statistics were applied.

Results

A total of 639 households were surveyed covering 3078 slum population. Majority 23.62% were monthly wage earner. Currently married were 52.14% and 25.01% educated up to secondary level. It was found that 230 (35.99%) had yellow ration card. Predominant material of roof and room was pucca in 346 (54.14%) and 490 (76.68%), respectively. Availability of drinking water source was within the premises in 598 (93.58%), near the premises in 40 (6.25%), and away from the premises in 1 (0.15%) households. Main source of lighting was electricity in 635 (99.37%) and kerosene in 4 (0.62%) households. Water-seal latrine owned by household was seen in 430 (67.29%) households out of which 389 (60.87%) were functional. Rest of the households, 209 (32.70%) were using public toilets.

Classification of 639 families according to Hashim and Kuppuswamy scale is shown in Table 1. According to Hashim system, 189 (29.58%) households belonged to automatic exclusion (non-BPL) category. When Modified Kuppuswamy scale was applied, 242 (37.87%) belonged to lower-middle class.

Comparison of households using different scales with ration card is shown in Tables 2a and 2b. It was observed that, 230 (35.99%) households had yellow ration card. When for the same families, Kuppuswamy scale was applied, 311 (48.67%) belonged to BPL class (upper-lower class and lower class). When Hashim system was applied, 310 (48.51%) households

Table 1: Classification of households according to Hashim's system and modified Kuppuswamy Scale

Socioeconomic Scales	Classification	Frequency, *n* (%)
Hashim's system	Automatic exclusion	189 (29.58)
	Automatic inclusion	177 (27.70)
	Others*	
	Score 0-3	140 (21.91)
	Score 4-12	133 (20.81)
Modified Kuppuswamy Scale	Upper	4 (0.64)
	Upper-middle	82 (12.83)
	Lower-middle	242 (37.87)
	Upper-lower	301 (47.10)
	Lower	10 (1.57)
Total		639 (100)

*Others include remaining households who have assigned scores from 0 to 12 based on the Hashim scoring pattern

Table 2a: Comparison of households using Kuppuswamy scale with ration card

Socioeconomic Scales	Ration card (BPL)		Total, *n* (%)	Kappa value
	Yes, *n* (%)	No, *n* (%)		
Kuppuswamy Scale				
BPL (yes)	129 (41.48)	182 (58.52)	311 (48.67)	0.107
BPL (no)	101 (30.79)	227 (69.21)	328 (51.33)	
Total	230 (35.99)	409 (64.01)	639 (100)	

BPL: Below poverty line

Table 2b: Comparison of households using Hashim system with ration card

Socioeconomic Scales	Ration card (BPL)		Total, *n* (%)	Kappa value
	Yes, *n* (%)	No, *n* (%)		
Hashim system				
BPL (yes)	116 (37.42)	194 (62.58)	310 (48.51)	0.027
BPL (no)	114 (34.65)	215 (65.35)	329 (51.49)	
Total	230 (35.99)	409 (64.01)	639 (100)	

BPL: Below poverty line

belonged to BPL inclusion category. Households who could be neither automatically included nor automatically excluded were graded on a scale of 0–12, with 12 being the most vulnerable, closest to automatic inclusion. All the households with score 4 and above in Hashim system were additionally included in automatic inclusion category BPL, and remaining households with scores 0–3 were added in automatic exclusion category (non-BPL).

To measure agreement between these scales, kappa statistics were used. The proportion of agreement for classification of households as BPL and non-BPL between Kuppuswamy Scale and ration card was 55.71% and between Hashim system and ration card was 51.79%.

Association of BPL exclusion/inclusion families according to Hashim's system with sociodemographic variables, amenities and assets are shown in Table 3. Majority Buddhist families (70.37%) and ST families (59.38%) belonged to BPL inclusion category. When statistical test was applied, significant association was found in type of house, religion, caste, predominant material of roof, wastewater outlet, separate kitchen and availability of refrigerator, computer/laptop, and motorized vehicle.

Discussion

Marital status and highest education level of study participants were similar to findings of SECC census 2011. Female-headed households were seen in 153 (23.94%) households which are higher in comparison with SECC census 2011 (13.69%) and National family health survey 4 (13%).[8]

Availability of toilet is an important indicator of the sanitation and proxy of socioeconomic status. In our study, 67.29% households had water-seal latrine, out of which 60.87% were functional which is higher as compared to other study conducted by Sufaira. C., in which only 13.7% households had their own toilet in notified areas and 30.6% in nonnotified area.[9] There was no practice of open-air defecation in the current study. Pucca roof (51.48%), availability of exclusive kitchen (54.14%), refrigerator (47.73%), computer/laptop with internet connection (12.36%), motorized vehicle (two/three wheeler) (70.27%), AC (0.94%), and washing machine (5.63%) were observed in the present study which was less as compared to SECC census 2011 as this census involves whole urban population (slum and nonslum).

The present study assigned 177 (27.70%) households to automatic inclusion according to Hashim system. As per SECC, "automatic inclusions" in the BPL category involved 27.65% of urban households which exactly matches to our study. After adding households with score 4 and above, 48.51% households were in BPL category whereas in SECC 2011, it was 34.96%. According to Modified Kuppuswamy scale, 48.67% households belonged to BPL category which is less than in study conducted by Priyadarisini *et al*. (70%) conducted in semiurban area.[10]

Total 230 (35.99%) households had yellow ration card. Comparison was done between existing system (possession of yellow ration card holder) with Modified Kuppuswamy scale (0.107) and ration card with Hashim system (0.027), and it revealed no agreement between these scales. It indicates that all three socioeconomic scales are different. Although ration card is vital document for BPL inclusion/exclusion criteria, it mainly considers family income. It is extremely difficult to get reliable data on income. Periodic modifications of ration card are not available and not mandatory. Once ration card is issued, it continues irrespective of their current SES. In a study conducted by National Council of Applied Economic Research in six states found that 40% of BPL cards have been issued to people who are above poverty line.[11] Similarly, in our study, households in possession of expensive assets such as pucca house, number of dwelling rooms more than 3, availability of separate kitchen, refrigerator, computer/laptop with internet connection, four wheeler, and washing machine also possessed yellow ration card. When the same is compared using Hashim system, not a single household from BPL inclusion category had computer/laptop with internet connection and four wheeler, and only one household had AC.

The Modified Kuppuswamy scale gives emphasis on education and occupation of the head of the family. Therefore, upper lower category can also include illiterate, unskilled member with a high income, even though individual has good standard of living. Thus, it does not necessarily reflect human development indicators such as sanitation and health. Conversely highly educated unemployed individual can be classified in upper category. Modified Kuppuswamy scale gives little importance to possessions and more to level of education and occupation.[12]

Table 3: Association of below poverty line/nonbelow poverty line families (as per Hashim system) with sociodemographic variables, amenities and assets

Variables	BPL exclusion families (n=329), n (%)	BPL inclusion families (n=310), n (%)	Total (n=639), n (%)	χ^2	P
House					
Own	277 (53.27)	243 (64.01)	520	3.552	0.059
Rented	52 (43.70)	67 (56.30)	119		
Family type					
Joint	148 (53.62)	128 (46.38)	276	0.888	0.346
Nuclear	181 (49.86)	182 (50.14)	363		
Color of ration card					
White	13 (68.42)	6 (31.58)	19	6.921	0.074
Yellow	114 (49.57)	116 (50.43)	230		
Orange	188 (53.56)	163 (46.44)	351		
No card	14 (35.90)	25 (64.10)	39		
Religion					
Hindu	278 (50.27)	275 (49.73)	553	17.132	0.002
Muslim	34 (75.56)	11 (24.44)	45		
Christian	4 (57.14)	3 (42.86)	7		
Buddhist	8 (29.63)	19 (70.37)	27		
Others	5 (71.43)	2 (28.57)	7		
Caste					
SC	94 (42.73)	126 (57.27)	220	14.153	0.003
ST	13 (40.63)	19 (59.38)	32		
Other reserved category	112 (59.26)	77 (40.74)	189		
Open	110 (55.56)	88 (44.44)	198		
Predominant material of roof					
Kuccha	30 (46.15)	35 (53.85)	65	10.019	0.007
Pucca	198 (57.23)	148 (42.77)	346		
Semi-pucca	101 (44.30)	127 (55.70)	228		
Predominant material of room					
Kuccha	29 (56.86)	22 (43.14)	51	2.406	0.300
Pucca	256 (52.24)	234 (47.76)	490		
Semi-pucca	44 (44.90)	54 (55.10)	98		
Waste water outlet					
Closed drainage	271 (49.36)	278 (50.64)	549	12.511	0.002
Open drainage	56 (68.29)	26 (31.71)	82		
No drainage	2 (25.00)	6 (75.00)	8		
Separate kitchen					
Yes	195 (59.27)	134 (40.73)	329	16.450	<0.001
No	134 (43.23)	176 (56.77)	310		
Refrigerator					
Yes	188 (61.64)	177 (38.37)	305	24.080	<0.001
No	141 (42.22)	193 (57.78)	334		
Computer/laptop					
Yes	79 (100)	0	79	84.94	<0.001
No	250 (44.64)	310 (55.36)	560		
Motorized vehicle					
Two/three wheeler	268 (59.69)	181 (40.31)	449	68.558	<0.001
Four wheeler	14 (100)	0	14		
No	47 (26.70)	129 (73.30)	176		
AC					
Yes	5 (83.33)	1 (16.67)	6	2.459	0.117
No	324 (51.18)	309 (48.82)	633		
Washing machine					
Yes	26 (72.22)	10 (27.77)	36	6.567	0.010
No	303 (50.24)	300 (49.75)	603		

Figures in parenthesis indicate percentages. BPL: Below poverty line

Hashim system includes housing/dwelling, basic civic amenities, and assets. This is holistic approach to measure BPL families. Hashim system criteria indicate overall status of urban slum population. In Hashim system scoring pattern is used for deprivation, those with higher score will have priority for inclusion in BPL category so it will be useful for calculating actual beneficiaries of BPL schemes.

Conclusions

Although there is no agreement between these three scales, Hashim system gives more accurate and realistic picture of the socioeconomic status of the households as compared to other socioeconomic scales. There is a need of authentic system to explore and update beneficiaries for various poverty alleviation schemes.

Acknowledgment

We would like to express our my deep gratitude to Principal of our Medical College for permitting us to carry out this research project. We would also like to thank Dr. Reshma Patil, Urban health training center incharge for their assistance in field activity. Our grateful thanks are also extended to Dr. P D Pore, Dr. V M Vaidya, Dr. A.B. Pokale, and all other colleagues from the department. We would also like to thank Mr. S P Sane and Mr. R B Deshmukh, statisticians of the department for their help.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Anwar HN, Zafar MI. Economic impact assessment of Katchi Abadi improvement programme a case study of Punjab. Journal of Applied Sciences 2003;3:454-61.
2. Liberatos P, Link BG, Kelsey JL. The measurement of social class in epidemiology. Epidemiol Rev 1988;10:87-121.
3. Available from: http://secc.gov.in/reportlistContentUrban. [Last accessed on 2018 Dec 27].
4. Solid waste management department. Pune Municipal Corporation, Pune city sanitation Plan 2011: 144p.
5. Available from: https://www.census2011.co.in/census/city/375-pune.html. [Last accessed on 2018 Dec 27].
6. Planning Commission. Perspective Planning Division Government of India. Report of the Expert Group to Recommend the Detailed Methodology for Identification of Families Living below Poverty Line in the Urban Areas; December, 2012.
7. Singh T, Sharma S, Nagesh S. Socio-economic status scales updated for 2017. Int J Res Med Sci 2017;5:3264-7.
8. International Institute for Population Sciences (IIPS) and ICF. National Family Health Survey (NFHS-4), India, 2015-16: Maharashtra. Mumbai: IIPS; 2018.
9. Sufaira C. Socio economic conditions of urban slum dwellers in Kannur municipality. IOSR J Humanit Soc Sci 2013:10:12-24.
10. Priyadarisini NJ, Rashmi K, Udaya Kiran N, Badiger S. Validation of standard of living scale with comparison to other socio-economic scales in a Semi Urban Area of Mangalore a pilot study. Nitte University Journal of Health Science 2016;6:62-7.
11. Ram F, Mohanty SK, Ram U. Understanding the Distribution of BPL Cards: All-India and Selected States. Vol. 44. New Delhi, India:Economic & Political Weekly; 2009. p. 68-71.
12. Patel AB, Prabhu AS, Dibley MJ, Kulkarni LR. A tool for rapid socioeconomic assessment. Indian J Pediatr 2007;74:349-52.