Assessing Quality of Life of Hindu and Muslim Households in Urban India

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Abstract

To address the gap of a comprehensive Quality of Life (QOL) measure suited to the Indian context, we have developed a household level index to measure QOL using the weighted aggregation technique. Our results show that Muslim households fare much worse than Upper Caste Hindu households with respect to QOL, and this disparity is persistent irrespective of their incomes. An important finding of our study is that the historical oppression of Muslims has situated them in a position whereby even when they are at par with Upper Castes in terms of income, they are unable to experience similar QOL.

Keywords: Social Capital, Quality of Life Index, Inter-religion Comparison

1. Introduction

Efforts made at analysing the overall well-being of individuals in general and societies in particular became frequent only in the 1960s, although some work was done in the 1930s. It became popular in the branch of social science research due to the acknowledgment that conventional measures of growth and development may not necessarily have a positive impact on the entire society at large (Burkett, 1985). Termed as Quality of Life (QOL), scholars have identified two approaches of measuring it- objective and subjective. Objective measures essentially use secondary data on educational attainment, mortality rates, employment, etc. to devise a suitable indicator of people's lives (Beukes and Colff, 1997). On the other hand, subjective measures attempt to incorporate factors which are individual specific, that is, which are dependent on their perception. The process of measuring and comparing QOL across countries or regions depends largely on the availability of objective indicators, since subjective indicators can be captured only through primary surveys which might often be infeasible.

In this context, popular indices resort to the selection of objective indicators, but there is neither a universally agreed upon measure of QOL nor a definite set of criteria (Marans and Stimson, 2011). Being a multi-dimensional concept, it is context dependent, with impact of the factors considered and the factors themselves changing over time. QOL studies aim at determining factors which are likely to have an influence on the well-being of people and also attempt to come up with suggestions to make overall living standards better (Lever, 2000).

To this end, the Physical Quality of Life Index (PQLI) developed by Morris D. Morris in 1979 was widely acknowledged until the Human Development Report (HDR) in 1991 introduced the Human Development Index (HDI) proposed by Amartya Sen and Mahbub Ul-Haq. It remains a popular measure of overall well-being in spite of its many limitations (see Desai, 1991; Dasgupta

and Weale, 1992; Srinivasan, 1994). Subsequently, a number of other indices have been proposed and presented by the HDR in 2010 in a bid to improve upon the simplistic nature of HDI, like the Inequality-adjusted HDI, the Gender Inequality Index and the Multi-Dimensional Poverty Index (MPI). In addition, scholars have developed their own QOL indices for inter-country comparison of QOL (Diener, 1995; Slottje, 1991; Estes, 1997; Berenger and Verdier-Chouchane, 2007). A number of studies have applied these measures, and have further developed and extended them for their analysis in the Indian context (Mukherjee, Ray and Rajyalakhmi, 1979; Ray, 2008; Ray, 1989; Sivakumar and Sarvalingam, 2010; Maurya and Pandey, 2010; Dehury and Mohanty, 2015; Mishra and Joe, 2020).

The studies based in India generally measure multidimensional deprivation or poverty. Here, we attempt to construct an index measuring QOL at the household level in India and compare the same between two religious groups. Our study makes three noteworthy contributions. First, while the objective of aforementioned deprivation indices is to categorise the units of analysis (generally households) into either deprived or not deprived, our study has a broader objective of creating a continuous spectrum of well-being from the worst to the best and locating the households therein. Second, no indices to our knowledge feature the role of social capital while measuring the well-being or deprivation of households. However, we have incorporated it in our study because when household is the unit of analysis, it is imperative to look into not only financial and human capital, but also their social capital (Coleman, 1988). Third, comparisons of QOL among social and religious groups have been made with respect to individual aspects of life, separately. None of them to our knowledge has used a holistic index, as the one prescribed here, and has applied it to study the differences among religious groups.

Our analysis is restricted to the urban areas of the country. Urban areas play an important role in terms of provision of employment opportunities, higher education, being centres of innovation and technology but at the same time, they face problems of congestion, poverty, intra-urban inequalities and social exclusion (Glaeser et al., 1991; Ravallion, Chen and Sangraula, 2007; McGranahan and Satterthwaite, 2014). In the Indian scenario, on one hand there are evidences of a positive relationship between urbanisation and economic growth (Tumbe, 2016). On the other hand, deprivation has not decreased significantly in the post reform period (Mishra and Ray 2013). In such a scenario, it will be interesting to analyse and compare the condition of different social and/or religious groups with respect to multiple dimensions of their lives.

Further, we have used the categories of 'Muslim' and 'Others', following the categorisation of socio-religious groups in Sachar Committee Report (2006) and Kannan (2008; 2018). Here, we have termed the latter as Upper Caste Hindu (UCH), who have been identified as the best performing group in the country (Kannan, 2019; Sachar Committee Report, 2006). Muslims in India have faced structural forms of exclusion in all fields of life (Hasan, 1988), through neglect and discrimination, which have resulted in them being unable to avail the opportunities for economic and social advancement. Their mobility is restricted because they either lack pre-requisites, like education, or have ingrained attitudes that lead them to think that they cannot pursue a particular career (Khalidi, 2004). According to Census 2011, about 40 percent of Muslims reside in urban areas, as against 29.5 percent of Hindus. But studies have shown that Muslims are more multidimensionally deprived relative to Hindus in urban areas than in rural areas (Fazal, 2013; John and Mutatkar, 2005; Bhat and Zavier, 2004). Therefore, we compare the condition of urban Muslim households to that of urban UCH households since it will give us an idea regarding the standing and the scope of improvement in the lives of former when compared with the latter.

In this context, the current paper has three objectives: one, to construct a composite index for measuring QOL at household level; two, comparing this index between Muslim and UCH households; and three, to analyse the interplay of income and QOL of households for both the religious groups.

The paper is divided into six sections. The following section provides a brief review of the pertinent literature. The analytical framework of our constructed index is elaborated in Section 3, and the methodology to achieve the same is discussed in section 4. Our findings are analysed in section 5. Section 6 concludes. All the relevant tables are provided in the Appendix section.

2. Literature Review

A literature review of works focusing on measuring and comparing the overall well-being of different communities would have been pertinent in the present study. Due to the dearth of literature on comparison of QOL across social and religious groups in the Indian context, we shall review here those studies which have dealt with few aspects of life, and those which have talked about deprivation and/or poverty across religious groups, among other things.

Shariff (1995) has compared socio-economic and demographic aspects such as land ownership, literacy, educational attainment, employment, consumption expenditure, etc. across religious groups in both rural and urban India. He finds that Muslims fare worse than Hindus (this includes Scheduled Caste and Scheduled Tribes) and Christians in all the aspects considered in his study. Similar results have been obtained in a number of other studies. Both Fazal (2013) and Mehrotra and Gandhi (2012) find that among all the religious groups, Muslims fare poorly with respect to literacy, school enrolment and educational attainment. Muslims are also observed to be the poorest

among all the religious groups, especially in urban areas (Bhat and Zavier, 2004; Pal et al., 1986; Shariff, 2001; John and Mutatkar, 2005; Sachar Committee Report, 2006).

In the context of examining multi-dimensional deprivation, a number of studies have used MPI. Here, we shall review only those which have compared MPI across religious groups in India. One such notable study was done by Alkire and Seth (2013). They examined MPI in India over the time period of 1999-2006 using the relevant National Family Health Survey-2 (NFHS) datasets and their findings reveal that although MPI decreased significantly at the national level over time, the disparity of poverty among religious groups has widened, with Muslims witnessing negligible change in their situation. This work was followed up by Alkire, Oldiges and Kanagaratnam (2018) where they peruse the situation for the years 2005/06-2015/16, using NFHS-3 and NFHS-4 datasets. Their results show that the overall MPI for India has reduced by half during this time. In spite of Muslims achieving the highest drop in MPI as against other religious groups, they still remain the most deprived. MPI and related indices have been applied to study specific regions as well. Debnath and Shah (2020) have used MPI in the context of the state of Tripura, Kanungo et al. (2019) employ MPI to select villages in West Bengal and Deka (2018) develops an MPI for the city of Guwahati. All of them find that Muslims are multidimensionally poorer than Hindus.

A somewhat different approach, adopted by Bag and Seth (2016), looks into the standard of living in slums in three Indian cities: Delhi, Kolkata and Mumbai. Using counting approach framework, they examine each household's monetary and non-monetary living conditions. They note that on an average, Muslim households in general have lower incomes while their expenditure on necessary items like food and fuel is higher than Hindu households.

The results obtained by Srinivasan and Mohanty (2004) differ from the aforementioned studies. They estimate the levels of deprivation for social and religious groups with regard to the

availability of certain basic amenities using NFHS-2 data. Their findings reveal that while there is no significant difference in deprivation between Hindus and Muslims, the former were slightly worse off in urban areas of the country.

The extant literature lacks studies on comprehensive QOL measures, and analyses of overall living conditions of living conditions of Muslims in India. Our study contributes both in terms of addition to literature of QOL as well as that of the condition of Indian Muslim households in a comprehensive way.

3. Analytical Framework

In this section, we elaborate on the aspects of life that have been considered in our study. Since our objective is to measure QOL at the household level, we invoke the discussion by Coleman (1988) on the three types of capital which are crucial in shaping the background of households, i.e. human, social and financial capital. Our selection of varied aspects is based on them.

We consider the dimensions of education and health as indicators of **human capital**:

Education: Quality education is one of the Sustainable Development Goals (SDGs) of the United Nations (UN). Higher educational qualifications improve the chances of securing decent work, i.e., work with higher earnings and better security (Kannan, 2019; Tachibanaki, 1997). Additionally, education also has intrinsic values, wherein it gives the individual a sense of autonomy, achievement, and security (Edgarton et al., 2012; Kannan, 2019). Educational qualifications work through these channels to enhance QOL of the individuals in the household.

Given its importance, education is one of the dimensions considered in various indices measuring QOL or well-being of societies. These include the HDI, Slottje (1995), Quality of Life (Diener, 1995), Index of Social Progress (Estes, 1997) and the MPI.

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In the present study, the dimension of education has been measured by three variables: whether members of the household have ever attended school or not; if so, number of completed years of schooling, and finally their ability of conversing in English. While the first two variables are commonly used in indices measuring this dimension, the third, we believe, plays an instrumental role in skill development. This consequently helps in increasing the employability of individuals and instilling a sense of confidence and achievement in them.

Health: A dimension measuring the aspect of health has always featured in indicators measuring the overall well-being of societies (PQLI, HDI, MPI). Those who score poorly in health indicators like life expectancy and infant mortality rates, have greater susceptibility to diseases, thereby adversely impacting their overall physical well-being.

Due to data limitations, we have had to resort to using the number of days of usual activities like work, school and household work, missed in a year due to short term or terminal illnesses. Higher number of days of usual activities missed on an average, in a household, implies a lower quality of life of the same. We concede that these variables are inadequate in reflecting the health of households. Nonetheless, it is an important dimension which cannot be omitted and hence, we proceeded with the selected variables.

The dimension of social and political networks has been incorporated to reflect the **social capital** of households.

Social and political networks: Social capital refers to connections, contacts and influences which individuals, and consequently the households maintain and benefit from in varied aspects of life, like educational qualifications and job search. Edgarton et al. (2012) defines social resources as "resources activated through one's direct and indirect contact", and that the extent of one's social

network like status and influence determines the possible utilization of such resources. The important role played by social capital in impacting the overall QOL of households has been highlighted in a number of studies (Lin, 1999; Coleman, 1988; Stone and Hughes, 2002). Coleman (1988) has shown how social capital of the family as well as of the community helps in the formation of human capital through generations.

Another way of building social capital is through political participation. Apart from being a crucial instrument for accumulating social capital within both the family and the community, political participation also has some intrinsic values. This helps in enhancing QOL by contributing to the freedom and autonomy enjoyed, especially by women (Dreze and Sen, 2002; Weitz-Shapiro and Winters, 2008; Kumar et al., 2019; Brody et al., 2017)

Thus, the social capital that a household builds through its social and political networks aids in augmenting their QOL. The present study considers the political participation of households and their respective social networks to measure this dimension.

To gauge the **financial capital** of households, the dimensions of basic amenities, employment, ownership of consumer goods and total household expenditure have been considered.

Basic Amenities: Availability of and accessibility to basic amenities like water and sanitation is one of the seventeen SDGs put forth by the UN. Clean drinking water, bathroom and closed drainage ensure better health, while regular availability of electricity enables activities to be undertaken without any hindrance. As Kumar (2012) states, access to basic amenities add to the 'physical and material comfort for quality of life', and is hence crucial for determining the well-being of the households.

Our study measures both the availability and the accessibility of each household to drinking water and to toilets, and the regularity of electricity in their homes. In addition, the type of '*chulha'* used for preparing meals has been included.

Employment: The concept of 'decent work' was originally introduced by International Labour Organisation (ILO) in 1997 and is also one of the SDGs. 'Decent work' is achieved when everyone has the opportunity to be engaged in work which guarantees 'fair income', stability, sufficient benefits to family, and aids in 'personal development and social integration.' Thus, decent work positively impacts QOL.

Two variables have been considered to measure the dimension of employment in our study. First is the occupational rank of the jobs in which members of the households are employed. Second is the nature of work for which we have used a framework similar to the one adopted by Lerche (2009). He applies in his analysis a classification of income and power in decreasing order ranging from 'wage labour with formal contract in formal economy' to 'bonded labour' for wage labourers; and 'self-employed with strong asset base' to 'survival self-employed' for people engaged in self-employment. Similarly, in our study, the 'nature of work' ranges from (in increasing order) 'private casual employees' to 'government permanent employee' for waged or salaried worker, and 'lowest total profit quartile' to 'highest total profit quartile' in case of non-farm business owners.

These two variables give us a broad idea regarding the kind of work that the members of the household are employed in. Among waged or salaried workers, having a permanent government job implies that they have job security while the occupation rank can be used as an indicator for financial security. This holds similarly for people in non-farm businesses, according to our classification of nature of work. Therefore, given everything else, households scoring better in these two variables enjoy more 'decent work' and hence have a higher QOL.

Ownership of consumer goods: There are certain goods which aid in smooth functioning of daily activities, thereby increasing the productivity of the members of the household. For example, households which have at least one personal transport facility do not always have to depend on availability of and accessibility to public transport. In our study, this dimension includes kitchen appliances, personal transport and electronic appliances. Thus, households which have a higher value in this dimension, have higher QOL.

Expenditure: The type of goods consumed and the amount of money spent on them by households reflect their QOL. This is because, while expenditure on basic necessary items like food, electricity and clothing is to be borne by all households, only some are able to spend their money on relatively luxurious goods, like microwave ovens, various forms of entertainment, etc. This dimension has been divided into *four sub-dimensions* in decreasing order of relative importance, as per our discretion.

- *Food expenditure*: Food is a necessary commodity and its expenditure has to be incurred by all. According to Engel's law, as income increases, percentage of income spent on food decreases. We have considered the percentage of income spent on certain necessary food items and associated expenses like oil/kerosene, for this purpose. In adherence to Engel's law, higher percentage of income spent on these items shows that the household is financially worse off.

- *Expenditure on non-food essential items*: These include essential items like electricity and clothing. We have considered the absolute amount of money spent on such items, since the percentage of income spent on them would be an inappropriate measure. For example, two households can spend the same percentage of incomes on clothing. But if one household has significantly larger income than the other, then the richer household has spent much

more on clothing which can either mean they buy more clothes, or better variants of clothes, or both. This clearly implies that the richer households are better off, and that the absolute amount of money spent on clothes would be a better indicator for us to come to that conclusion. Similar logic holds for rest of the items that have been considered for measuring this sub-dimension. Given everything else, a higher value of this sub-dimension implies better QOL.

- *Expenditure on non-essential household items*: These include expenditure on telephone, soap and other such goods for personal grooming, and kitchen items. The goods are not, in themselves, absolutely essential for survival, but they make household and personal work easier. Therefore, the absolute amount of expenditure on these items reflects a certain standard of living. The reasoning follows from the discussion on the previous sub-dimension of expenditure.

- *Expenditure on luxury and recreation*: These include the least important of all expenditures, like those on vacations and in restaurants. Such goods and services are not necessary for survival but solely enhance the comfort of household members. They can be afforded only by those households which have sufficient income remaining after having incurred expenditure on all other necessities. Again, absolute value of expenditure has been considered and higher value of this sub-dimension implies better QOL.

Thus, we have reasoned the inclusion of seven dimensions encompassing human, social and financial capital of households in our QOL measuring index. Next, the measurement of each dimension and method used for constructing the final index are discussed.

4. Data Sources and Methodology

In this section we shall explain the data source, measurement of variables, weights assigned to each variable and to each dimension, and the aggregating technique applied to arrive at the final values of the QOL index.

4.1 Data source and sample size

Indian Human Development Survey – II (IHDS-II) 2011-12 household and individual level datasets have been availed in this study. Our sample has a total of 5827 households, of which 3786 are UCH and 2041 are Muslim. For variables where individual data is used, the average value of the household has been calculated to obtain household level values.

4.2 Definition of variables used in the study

The following discusses the definitions of the variables used in each dimension of the index.

The dimension of **'Education'** is captured by the following variables:

- *Conversance in English*: A binary variable assuming value 1 if the respondent can speak in English, and 0 otherwise.
- *Ever attended school*: A binary variable assuming value 1 if the respondent has ever attended school, and 0 otherwise.
- *Completed years of schooling*: Total number of years of schooling completed by the respondent.

The dimension of **'Health'** is measured by the variables of:

- *Number of days of usual activities (like school, work, domestic work, etc.) missed due to short-term illness in a year.*

- *Number of days of usual activities missed due to long-term illness in a year.*

The dimension of **'Social and Political Networks'** is measured using binary variables that assume value 1 if there is any participation or acquaintance of any member of the household and 0 otherwise. Political participation of households is measured by participation in *Mahila Mandal*, any union, self-help groups, NGOs, any political party, any cooperative, and local governance. Social connections are measured through personal acquaintance with doctors and/or health workers, teachers, and government employees /politicians/police/military.

Variables measuring the dimension of **'Basic Amenities'** are:

- *Type of 'chulha' used*: Categorical variable ranging from 1 to 4, with 1 signifying open fire used for cooking and 4 standing for non-biomass modes of cooking (kerosene, LPG, etc.). The IHDS categorisation has been used with no modifications made.

- *Access to electricity*: It captures both availability and duration of electricity in the household. Its value ranges from 0 to 24, with 0 implying that the household does not have access to electricity, and 24 signifying that the household has access to 24 hours of electricity in a day.

- *Type of toilet and access to it*: Value of this variable ranges from 1 to 7, with 1 signifying no available toilet facility within or outside the household premises, and 7 denoting the availability of flush toilet within the household premises.

- *Access to drinking water*: Categorical variable ranging from 1 to 21. The variable assumes value 1 to 20 when the source of drinking water is outside the household premises with decreasing distance to the same, and value 21 when it is within the household premises.

- *Main source and duration of drinking water*: Categorical variable ranging from 1 to 28 measuring the main source of drinking water and duration of piped water available to the household. Value 1 includes all sources of drinking water that are categorized as 'others' by IHDS; 2 refers to surface water like pond, river, rainwater, etc. as the main source of drinking water; 3 refers to underground water sources like covered well, tube wells, hand pumps and also tanker trucks. Values 4 to 27 correspond to the source of water being piped water with increasing duration of availability of the same. For example, value 4 stands for piped water availability for only one hour, value 5 for two hours of piped water, and so on till value 27. Since 'bottled water' can be considered as the most expensive source of drinking water, we have assigned the value 28 to it.

Variables used for measuring the dimension of **'Employment'** are:

- *Occupation rank*: It corresponds to the occupation code provided by the National Classification of Occupation 1968. A larger value of this variable implies a lower quality of occupation.

- *Nature of work*: Values of this variable ranges from 0 to 4. Value 0 corresponds to respondents who are neither waged workers nor are engaged in non-farm businesses.
  For waged and salaried workers, two aspects of their employment are considered: whether the job is permanent or casual, and whether it is a government or a private job. The variable takes value 1 if the employee is in a casual and private job; 2 if the employee is in a casual and government job; 3 if the employee is in a permanent and private job; 4 if he/she is in a permanent and government job.

For respondents engaged in non-farm businesses, their total profit has been divided into four quartiles. The lowest quartile corresponds to value 1, the second quartile corresponds to value 2, and so on.

Variables used for measuring the dimension of **'Ownership of Consumer Goods'** are:

Ownership of goods by the household like bicycle, sewing machine, generator, mixer/grinder, motorcycle, television set (both colour and black and white), cooler (includes air conditioner), clock, electric fan, chair, cot, telephone, cell phone, refrigerator, pressure cooker, dish tv/cable, car, washing machine, computer, laptop, credit card and microwave. All of these are binary variables, i.e., they assume value 1 if the household owns any such good, and 0 otherwise.

The dimension of **'Total Expenditure'** is further divided into four sub-dimensions:

- *Food expenditure*: Captured by the percentage of income spent annually on basic food like rice, wheat, pulses, cereal products and other cereals, and on kerosene/oil.

- *Non-food essential expenditure*: Measured by the absolute amount of money spent annually on electricity/fuel, house rent, clothing, and footwear.

- *Expenditure on non-essential consumer goods*: Absolute amount of money spent annually on telephone, cosmetics, household items (including electric bulb, glassware, etc.), soap, furniture, crockery, cooking appliances, services (including barber, domestic services, etc.), personal care (including spectacles, umbrella, etc.) and personal transport equipment measure this subdimension.

- *Expenditure on recreation and luxury goods*: Absolute amount of money spent annually in restaurants, on entertainment, on recreation goods like television, musical instrument, etc., and on vacations capture this subdimension.

Two points are to be noted. First, variables measuring the dimensions of health, education and employment are individual level data. As mentioned before, their averages have been computed to arrive at their respective household level values. Second, all variables except 'occupation rank', food expenditure and the ones measuring 'health' dimension are constructed such that households with higher values fare better in the corresponding aspect, and hence enjoy a better quality of life.

4.3 Normalisation of values of the variables

To make the variables unit free and hence comparable, each of them has been scaled such that their values range between 0 and 100, using the following formula:

$$\text{Normalised value of variable v} = \left(\frac{\text{Observed value of variable v} - \text{Minimum value of variable v}}{\text{Maximum value of variable v} - \text{Minimum value of variable v}} \right) * 100$$

As already discussed, higher values of certain variables indicate that households are worse-off. These have been scaled using the formula:

$$\text{Normalised value of the respective variables} = \left(\frac{\text{Maximum value of variable} - \text{Observed value of the variable}}{\text{Maximum value of variable} - \text{Minimum value of the variable}} \right) * 100$$

Thus, given the 0 to 100 range of normalised variables, and the manner in which the categorical variables have been constructed, higher values of each of these signify higher value of their respective dimension or sub-dimension and consequently a better QOL.

4.4 Weighting of variables within sub-dimensions and dimensions and of dimensions for constructing the QOL index

Equal weights have been attached to variables within each dimension or sub-dimension. This is done because they are perceived to be equally important in determining the magnitude of the dimension or sub-dimension. The dimension of expenditure has four further sub-dimensions which have been weighted according to our discretion. Weighted sum of these sub-dimensions gives the corresponding value of this dimension.

Similarly, we have used our discretion while assigning unequal weights to different dimensions for obtaining the final QOL index values. Basic amenities, health, education and decent employment form the very basic essentials of survival. Highest weight of 3/17 is assigned to each of them. Expenditure and ownership of consumer goods are next in order of importance. A weight of 2/17 is attached to each of them. Finally, lowest weight of 1/17 has been assigned to the dimension of social and political network since it affects QOL the least amongst all the dimensions. Table 1 provides a detailed disaggregation of weights assigned.

4.5 Aggregation of dimensions to arrive at final QOL index values

A weighted sum of the seven dimensions yielded the final values of the index measuring QOL:

$$QOL_j = \Sigma_i \, w_i \, X_{ij}$$

where, QOL_j is the quality of life of jth household, w_i is weight assigned to the ith dimension, and X_{ij} is the value of ith dimension of the jth household.

Using the methodology described above, QOL index values are obtained for each household in the selected sample. By construction, higher index values imply better QOL of household. For ease of

analysis, the resultant index values have been scaled such that they lie between 0 and 100. Further, they have been divided into quintiles. Table 2 delineates these categories, their denotations and their corresponding range of index values.

As we have mentioned, subjective weights have been assigned to each dimension for the construction of the QOL index. However, our perceived importance is based purely on intuition and does not have a statistical foreground. Thus, Principal Component Analysis (PCA) has been applied to the calculated dimensions to arrive at a different set of QOL index values.

The following section discusses the results obtained from the manually constructed QOL index and that of the index constructed using PCA. Difference and similarity (if any) of the two approaches of measuring QOL have been highlighted in the following section.

5. Results

In this section, we shall first discuss the initial observations of each of the dimensions forming the index. Next, QOL indices constructed by subjective weights, and that by PCA are compared and the findings of the same are analysed for each of the two religious groups. Lastly, the income level of households and their corresponding QOL index has been examined.

5.1 Comparison of each dimension between religious groups

Box plots have been used to depict the distribution of values of the dimensions, comparing them between the two religious groups. Figure 1 highlights the presence of clustering and the corresponding difference between UCH and Muslim households. The horizontal lines at either ends of a box represent the first and third quartile, while the line passing through the box gives us the measure of median. Figure 1 give us a broad picture of the difference in distribution of each aspect of QOL.
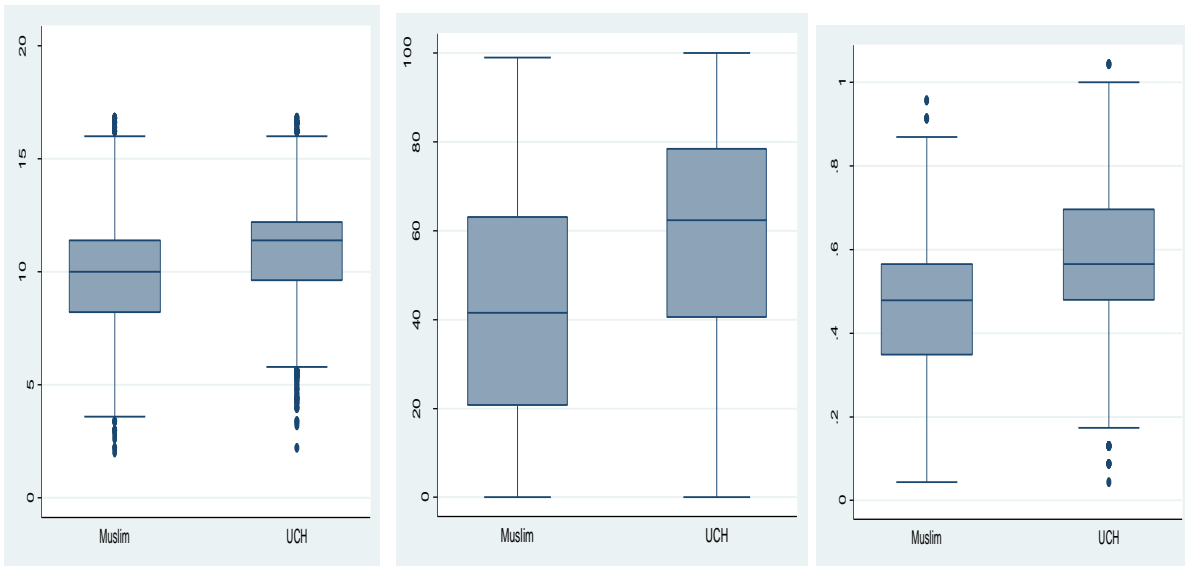
Figure 1 Box diagrams comparing the individual dimensions between UCH and Muslim households
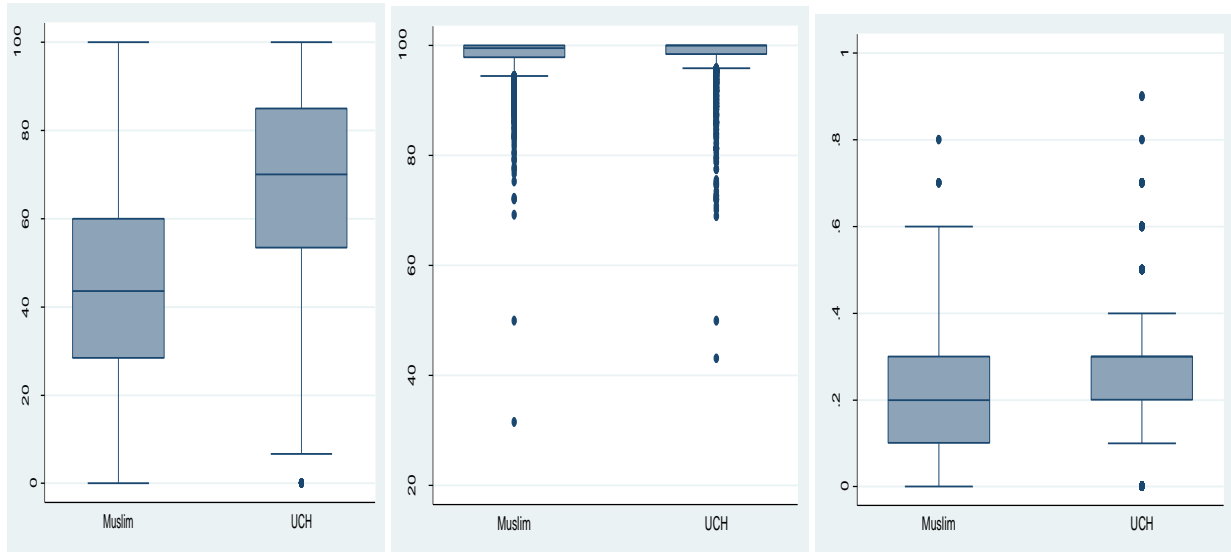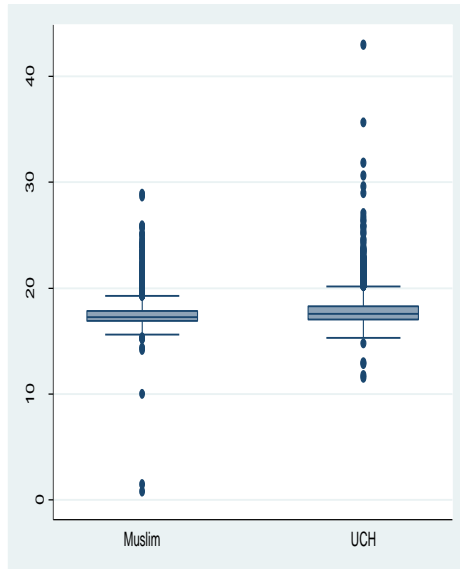

(a) Education

(b) Health

(c) Social and Political Network

(d) Basic Amenities

(e) Employment

(f) Consumer Goods

(g) Expenditure

Source: Compiled by authors

A cursory glance at the box plots of the dimensions of education, employment, ownership of consumer goods, and basic amenities shows that UCH households fare significantly better than Muslim households. The former clusters around higher values of these four dimensions, with their corresponding medians considerably outweighing that of the latter. Thus, on an average, UCH households are better off in these dimensions than Muslim households.

Our results on the poor performance of Muslim households in the aspect of education have been substantiated widely by studies (Kalam, 2007; Shah, 2007; Basant, 2012). Lack of access to schools, facing discrimination, and low prospects of getting formal jobs prevent Muslims from securing proper education (Wilkinson, 2007; Shah, 2007). They are also under-represented in formal employment which includes professional, technical and managerial work, whereas they are over-represented in street vending (Robinson, 2007; Basant, 2012). Being largely employed in the informal sector, their conditions of work are insecure and vulnerable (Robinson, 2007; Unni, 2009;

Kalam, 2007). Living in ghettoized areas contributes further to their misery by denying them proper access to basic amenities (Mhaskar, 2018).

The difference between the two groups is not as apparent from the box plots of the dimensions of social and political network, health, and total expenditure. The median value of social and political network for UCH households (0.3) is higher than that of Muslim households (0.2). But this is not clearly visible in the diagram because the former is equal to the value of its upper quartile. The lack of political representation of Muslims has been documented by Basant (2012).

In case of the dimension of health, a high percentage of individuals have reported zero days of daily activities missed due to any kind of illness. This skews the data largely towards the highest value of the dimension, i.e., 100. In fact, the median value for UCH households is 100 while that of Muslim households is 99.52. This explains the contorted box plot of this dimension. In spite of this, we observe that the former is better off than the latter in this aspect.

The box plot diagram for the dimension of total expenditure can be explained by the small interquartile range of their values for both the groups. On inspection, we find that the median of the value for UCH households (17.56) is higher than that of Muslim households (17.27), thereby placing the UCH households in a better position, on an average.

In addition to comparisons using box pots, the significance of the differences in mean values between the two groups has also been tested by running t-tests for each dimension. We find that the differences are in favour of UCH households, and are significant at five percent level of significance.

Next, we shall explore the QOL index values computed from our subjective weights and from PCA. For PCA, eigen values with magnitudes greater than one have been considered and factor

loadings have been taken as the weights (see Table 3). The QOL index values using this method have been arrived at by a weighted summation of the values of the dimensions. The following sub-section discusses the results obtained from each method.

5.2 Comparison of QOL index between religious groups

We have used the categorisation of QOL mentioned in Table 2, and have calculated the percentage of UCH and Muslim households belonging to each category on the basis of QOL index values using both subjective weights and PCA. The corresponding figures are presented and compared in Table 4.

On comparing the percentage figures obtained from both the methods, we observe that they are similar to each other. Also, when households are ranked according to each set of QOL index values, the Spearman's Rank Correlation turns out to be 0.997, significant at 1 percent level of significance. These two observations lead us to claim that the index calculated by assigning unequal subjective weights effectively reflects the QOL experienced by households. Therefore, further analysis will be based solely on this index.

The percentage of Muslim households steadily decreases whereas that of UCH households increases. Approximately 63 percent of Muslim households belong to categories 1 and 2, whereas the same for UCH households is about 28 percent. Conversely, 'comfortable' and 'most comfortable' levels of QOL are experienced by only about 16 percent of the former and 52 percent of the latter. In fact, majority of the Muslim households belong to category 1 whereas, the same for UCH households belong to category 5.

Therefore, based on our sample, the overall QOL of Muslim households is worse than that of UCH. It follows from our previous discussion where we find Muslim households faring poorly than their

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UCH counterparts in every dimension. Muslims in India have been historically discriminated against in varied aspects of life which has resulted in their lack of upward economic and social mobility through generations. They continue to be clustered at the bottom rungs of the society, experiencing poor QOL in urban areas of the country, as observed in our study. The UN-Habitat (City Prosperity Index, 2012) defines an inclusive city as "one that overrides differences of race, gender, class, generation, and ensures inclusion, equality of opportunity as well as capability of all members in the society to determine an agreed set of social institutions that govern social interactions." From our results, we can argue that the urban areas in India have not achieved such inclusion in their process of development, because we observe that a wide gap exists between UCH and Muslims in almost all aspects.

5.3 Comparison of QOL indices between religious groups across income categories

It would be interesting to assess whether the disparity in QOL observed in the previous analysis, exists between the two religious groups when they belong to the same income group. Income directly affects and is affected by education, employment and total expenditure. Thus, it would be reasonable to expect that for higher income groups, percentage of households belonging to 'comfortable' and 'very comfortable' categories of QOL would be higher for both UCH and Muslim households.

IHDS data attempts to capture the total income by adding income from all the sources as reported by each household. Values of this income variable have been divided into quintiles, with higher quintiles implying higher level of income. We examine the composition of UCH and Muslim households in each category of QOL for each income group. Drawing on the categories of QOL index and the five income groups, we have constructed the following figure from Table 5.

Figure 2 Comparison of QOL between Hindu and Muslim households across Income Groups
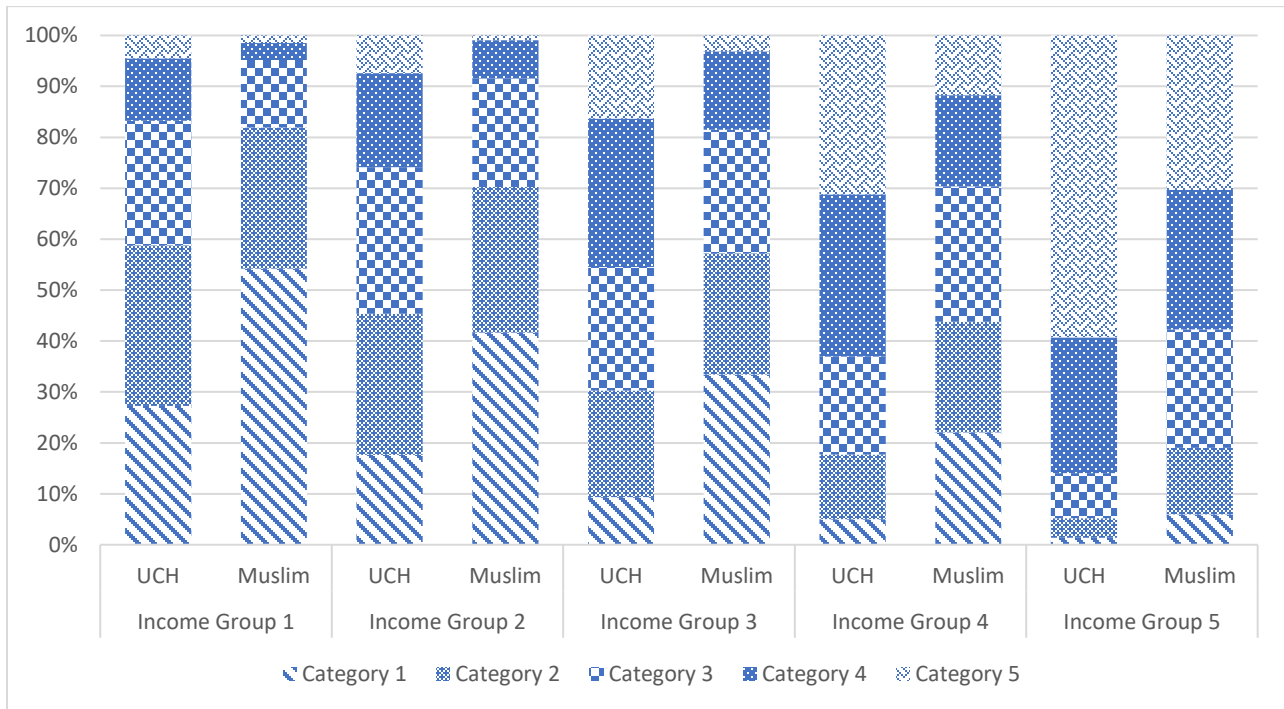
Source: Compiled from results

As expected, with increase in income, the percentage of both UCH and Muslim households belonging to the 'very poor' category decreases, and the same belonging to 'very comfortable' category increases. However, the magnitudes of these for the two groups are starkly different.

The percentage of Muslim households in 'very poor' and 'poor' categories is more than their UCH counterparts in every income group. Conversely, the percentage of UCH households in 'comfortable' and 'very comfortable' categories is significantly more than Muslim households, throughout. Therefore, the disparity observed in the overall picture where UCH cluster in the better ranges of QOL index values, is reproduced throughout all the income categories.

The difference in mean income (UCH – Rs. 242348 and Muslim – Rs.132940) may be put forward as an obvious explanation for the difference in QOL between the two groups. However, such a reasoning can be misplaced and hasty, because we observe that the difference between their

respective percentages in the 'very comfortable' and 'very poor' favours UCH households, regardless of the income group we deal with. Therefore, difference solely in income would be an incomplete reasoning to explain the contrasting observations. This highlights the limitation of using only income differences to explain differences in QOL.

It is but the historical oppression of Muslims which has situated them in a position whereby even when they are at par with UCHs in terms of income, they are unable to experience similar QOL. Therefore, merely having high household income does not translate into high QOL, because it takes into account only the financial capital of households. In fact, the social and human capital of a household plays a crucial role to determine their accessibility to requisites of at least 'moderate' level of QOL.

6. Conclusion

In this paper, we have constructed an index measuring QOL. Our assignment of unequal subjective weights on the basis of differential importance of the dimensions forming the index yielded similar results as that from a PCA, thereby validating our discretionary weighting techniques. We have applied this index for a comparative study of QOL between UCHs and Muslims in India at the household level, and we find that the latter fare much worse than the former. About 63 percent of Muslim households lie in the 'very poor' and 'poor' categories of QOL, while the same for UCH households is approximately 28 percent. Furthermore, we find that differences in QOL cannot be attributed solely to differences in income because the difference in QOL persists between them across all income quintiles.

Thus, we can claim that policy prescriptions aimed solely at increasing the incomes of Muslim households may not be sufficient enough to bring them at par with UCH households. Many other

aspects need to be addressed simultaneously, because Muslims having lower educational qualifications or being engaged in poor quality jobs is not a one-off phenomenon. They fare worse in most facets of life because they have been discriminated against for generations. This induces a self-reproducing chain of events as a result of which they are stuck in a vicious circle, leading them to continuously perform poorly. Policies must not only take care of the economic betterment of Muslims, but also aim at sufficient social upliftment which will aid them in breaking away from the inter-generational vicious circle.

Our study comes with certain limitations which make way for further scope of research. The first limitation would be its inability to reflect capabilities of the concerned households. Our index is based on objective data which capture functionings, which are necessary for associated capabilities but are not sufficient in themselves. One way to circumvent this problem and capture capabilities would be resorting to primary surveys. Also, we have taken household as the unit of analysis. This suffers from the assumption that there is no intra-household inequality. Another limitation with regard to the measurement of the dimension of health has already been mentioned previously in our analysis. Variables which capture this aspect better would yield more accurate results. Here we have considered only the urban areas and two religious groups. An extension of similar work based in rural areas of the country and comparison among other social and religious groups might reveal interesting results.

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Appendix

Table 1: Detailed Disaggregation of Subjective Weights Assigned to each Dimension, Sub-dimension and Variables

Dimension	Weight for each dimension	Sub-dimension	Weight for each sub-dimension	Variables within dimension/sub-dimension	Weight for each variable within sub-dimension/dimension
Basic Amenities	(3/17)			Access and type of toilet	(1/5)
				Access to Electricity	(1/5)
				Type of *'chulha'*	(1/5)
				Source of drinking water	(1/5)
				Access to and type of drinking water	(1/5)
Health	(3/17)			Number of days of usual activities missed due to short term illness	(1/2)
				Number of days of usual activities missed due to long term illness	(1/2)
Education	(3/17)			Completed Years of Schooling	(1/3)
				Conversant in English	(1/3)

				Ever Attended School	(1/3)
Employment	(3/17)			Occupation Rank	(1/2)
				Nature of Work	(1/2)
Ownership of consumer goods	(2/17)			Bicycle	(1/22)
				Sewing Machine	(1/22)
				Generator Set	(1/22)
				Mixer/ Grinder	(1/22)
				Motorcycle	(1/22)
				Television	(1/22)
				Cooler/ Air Conditioner	(1/22)
				Clock	(1/22)
				Electric Fan	(1/22)
				Chair	(1/22)
				Cot	(1/22)
				Telephone	(1/22)
				Cell Phone	(1/22)
				Refrigerator	(1/22)
				Pressure Cooker	(1/22)
				Cable/ Dish TV	(1/22)
				Car	(1/22)
				Washing Machine	(1/22)
				Computer	(1/22)
				Laptop	(1/22)
				Credit Card	(1/22)
				Microwave	(1/22)
		Food expenditure	(4/10)	Basic food	(1/2)
				Oil/Kerosene	(1/2)
				Electricity and fuel	(1/4)
			(3/10)	House Rent	(1/4)

Total Expenditure	(2/17)	Non-food essential expenditure		Clothing	(1/4)
				Footwear	(1/4)
		Non-essential consumer goods	(2/10)	Telephone	(1/10)
				Cosmetics	(1/10)
				Household items (incl. electric bulb, tubelight, glassware, etc.)	(1/10)
				Soap	(1/10)
				Furniture	(1/10)
				Crockery	(1/10)
				Cooking Appliances	(1/10)
				Services (incl. domestic servant, barber, laundry, etc.)	(1/10)
				Personal Care (incl. spectacles, umbrella, etc.)	(1/10)
				Personal transport equipment	(1/10)
		Recreation and Luxury Expenditure	(1/10)	Restaurants	(1/4)
				Entertainment	(1/4)
				Recreation goods	(1/4)
				Vacations/holidays	(1/4)
				Participation in Mahila Mandal	(1/10)

Social and Political Networks	(1/17)			Participation in any union	(1/10)
				Participation in Self Help Groups	(1/10)
				Participation in NGOs	(1/10)
				Participation in any Political party	(1/10)
				Participation in any co-operatives	(1/10)
				Participation in local governance	(1/10)
				Personal Acquaintance with teachers	(1/10)
				Personal Acquaintance among government employees/politicians/police/military	(1/10)

Source: Constructed by authors

Table 2: Categorisation of QOL based on index values

Category	Range of Index Value	Quality of Life
Category 1	0 – 51.199	Very poor
Category 2	51.2– 62.103	Poor
Category 3	62.119 – 72.501	Moderate
Category 4	72.5112– 81.996	Comfortable
Category 5	82.011 – 100	Very comfortable

Source: Constructed by authors

Table 3: Factor loadings of PCA

Dimensions	Component 1
Education	0.4708
Health	0.1545
Social and Political Network	0.3086
Basic Amenities	0.3065
Employment	0.395
Ownership of Consumer Goods	0.5134
Total expenditure	0.3817

Source: Compiled from results

Table 4: Percentage of UCH and Muslim households in categories of QOL

QOL Category	QOL using subjective weights		QOL using PCA	
	UCH	Muslim	UCH	Muslim
Category 1	10.41	37.82	10.09	38.41
Category 2	17.27	25.04	16.69	26.11
Category 3	19.76	20.48	20.55	19.01
Category 4	24.78	11.12	24.72	11.22
Category 5	27.79	5.54	27.95	5.24

Source: Computed from results

Table 5: Comparison of QOL between Hindu and Muslim households across Income Groups

Income Groups	Income Group 1		Income Group 2		Income Group 3		Income Group 4		Income Group 5	
Category of QOL	UCH	Muslim	UCH	Muslim	UCH	Muslim	UCH	Muslim	UCH	Muslim
Category 1	27.24	54.23	17.65	41.62	9.34	33.41	5.03	22.07	1.4	5.95
Category 2	31.56	27.69	27.73	28.63	20.92	23.83	12.69	21.72	3.81	13.1
Category 3	24.42	13.27	28.74	21.28	24.27	24.28	19.2	26.55	8.83	23.21
Category 4	12.29	3.32	18.49	7.53	29.15	15.37	31.89	17.93	26.68	27.38
Category 5	4.49	1.49	7.39	0.94	16.32	3.12	31.2	11.72	59.28	30.36

Source: Compiled from results