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Evaluating and measuring a health capability set to assess public health interventions in a Purépecha community in Mexico

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Abstract

The capability approach in general and the health capability paradigm, in particular, represent a framework to build health-related indicators that take into account the impact that health interventions can have on aspects of life, such as freedom and welfare, going beyond health. This study aims to show how health capabilities can be used to generate a measure of health-related quality of life through a case study carried out in the Indigenous Purépecha community of Cuanajo, México by considering five internal and external dimensions: (a) health; (b) health agency; (c) medical care and services; (d) community, and (e) material living conditions. Subjective and objective indicators were collected through an instrument applied to the adult population (n=171). The point allocation methodology was used to elicit their attached weights while the aggregation of indicators to evaluate health capabilities was done considering a weighted mean function together with the Alkire–Foster methodology. Differences in computed punctual weights between valued dimensions were almost negligible, and thus, aggregation was performed using equal weights but retaining three final indices due to incommensurability: subjective health capabilities, dwelling facilities, and income sufficiency. For this community, health agency, community, and dwelling facility health-related capabilities need to be expanded.

Keywords: Capability approach, health capabilities, Indigenous peoples, Mexico, public health interventions, Purépecha community

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Introduction

The effectiveness of health interventions is measured using health-related quality of life

(HRQL) indicators, such as QALYs (quality-adjusted life years) or DALYs (disability-adjusted life years). While these measures combine both the quantity and quality of the years that can be gained by implementing an intervention, they have two major drawbacks. First, they only consider the impact on health—usually in its physical, mental, and social dimensions—omitting the impact that health interventions can have on broader aspects of life, such as freedom and welfare. Second, because they have as their theoretical framework the welfarist economy in its utilitarian version, they inherit its problems related to subjectivity and adaptation.

In this sense, the capability approach (CA) in general and the health capability paradigm (HCPa; Ruger, 2010b) in particular, represent a framework to build HRQL indicators that solve these disadvantages. In the CA, people's quality of life is assessed by the freedom to achieve a set of interrelated beings and doings called functionings, which constitutes the opportunity to achieve one type of life or another (Sen, 1992) and that is the result of a process of valuation and reasoning in which the person flourishes acting as an agent of change. In this sense, quality of life distinguishes from wellbeing in that the latter is concerned only with the opportunity aspect of choosing from possible livings (the set of capabilities or the capability set) and not with the process of constructing those livings. Focusing on the health sector, and bearing in mind that each particular assessment exercise requires a specific set of capabilities, health capabilities (Ruger, 2010a, 2010b), the corresponding freedoms in the health domain, constitute within the HCPa the ideal framework to design HRQL indicators for use in the economic evaluation of health and public health interventions. Nevertheless, building an indicator based on the HCPa to monitor or evaluate health interventions imposes two main challenges at both the individual and collective levels: the delimitation and the measurement of the health capability set (HCS). This set must provide "confidence and ability to be effective in achieving optimal health given biologic and genetic disposition; intermediate and the broader social, political, and economic environment; and the access to the public health and health care system" (Ruger, 2010b, p. 47). It is worth noting here that Ruger's HCPa is more related to the Senian perspective of the CA than that of Nussbaum's (*see* Nussbaum, 2011) because of the importance it gives to (health) agency.

Even though it would be ideal to have a unique index to assess human development and wellbeing in societies that allows complete ranking of all alternatives, human diversity and heterogeneity in components of the HCS can make this difficult to achieve. Thus, incompleteness is present in the HCPa as it is in the general CA framework, which means that the HCS in one evaluative exercise (and its measurement) can differ from that constructed for another. Ruger (2010b) has provided the health capability profile (HCP) to help selection of the HCS dimensions, which is a general list of internal and external factors. In addition, and given overlapping of dimensions in the health domain, Nussbaum's (2011) list of 10 central human capabilities and other lists of capabilities proposed within the health sector (Al-Janabi et al., 2012; Coast et al., 2008; Lorgelly et al., 2008; Lorgelly et al., 2010; Simon et al. 2013) can serve as guides to build an HCS, but the final set will depend, ideally, on a process of public reasoning (Sen, 2005) and, imperfectibly, on a process of practical reasoning (Alkire, 2002).

Considering the richness of the CA for analysing current social problems, this work explores its operationalisation in the health domain, applying the HCPa in Cuanajo, a semirural, Indigenous Purépecha community situated in the Mexican state of Michoacán. The Purépechas (also known as P'urhépecha) are an Indigenous people with the characteristic that each member is a *p'urhé* (which means people). This implies self-affirmation as human beings. Because the epidemiological transition—the change in the epidemiological profile due to infectious and parasitic diseases yielding as the leading cause of morbidity and mortality rates to chronic diseases such as diabetes, hypertension, and obesity—is linked to ecobiological, socioeconomical, political, cultural, medical, and public health-related structures (Omran, 2005), health capabilities offer an opportunity to generate indicators to monitor and evaluate health-related achievements in Indigenous communities.

Cuanajo, located in the municipality of Pátzcuaro, was selected as a first step in a long-term project to show how indicators based on health capabilities can be generated to evaluate public health interventions among the Purépecha population, which is at an intermediate stage of the epidemiological transition, considering the perspective of any interested group, including governmental and non-governmental organisations. In this respect, this is a proposal to

generate indicators that can be interpreted by federal (and state) government but also by the increasing traditional self-government of the communities that must exercise direct budget (Cuanajo is about to do it). As can be verified by interviews described in previous work (Téllez Cabrera, 2016) and that implies practical reasoning, current population health in Cuanajo is a consequence of the combination of their traditional heritage and modern, learned lifestyles. There are three principal problems in this community:

- prevalence of diseases, such as diabetes and high blood pressure, related to changes in eating habits;
- abuse of alcoholic beverages, not only among the adult population but also among children younger than 14 years old, behaviour which they adopt due to both imitation and community pressure; and
- stress caused by increasing insecurity in the community due to the proliferation of street-youth gangs related to the abuse of alcohol and drugs.

The qualitative analysis (through data saturation) in the earlier work suggested the following dimensions be employed to build the HCS: (a) *health, with physical, mental, and social sub-dimensions;* (b) *health agency*, that "constitutes individuals' and groups' ability to pursue valuable health goals and to play an effective role in bringing about health" (Ruger, 2010a, p. 146), incorporating here health knowledge and knowledge about how traditional medicine can affect or contribute to health*;* (c) *material conditions,* including dwelling facilities, access to health services and monetary resources; and (d) *community support.*

The present work explores how they can be implemented in an instrument that enables valuation and measurement of health capabilities. It is important to highlight that, for operational purposes, an "'elementary evaluation', i.e. valuing a set by the value of one distinguished element of it (e.g. the chosen one or the best one)" (Sen, 1992, p. 50) is considered here. Also, the HCS is constituted by health and health-related functioning vectors—which can be used as a proxy—and by health-related resources, according to the HCP.

Methods

Selection of Dimensions and Indicators

Considering here that the difference between subjective and objective indicators of wellbeing refers not to methods of measurement (self-report or not self-report), but to what is measured (feelings or not feelings; Des Gasper, 2005), subjective indicators for health, health agency, and community dimensions were proposed due to the difficulty of obtaining objective acute information. Hence, these indicators represent personal evaluations and perceptions. In addition, because in measuring access to health services, what is important is availability when needed and not only affiliation to any institution, a subjective indicator was also proposed for this dimension. Hence, an instrument provisionally named CAPSAS_a (*Capacidades en salud subjetivas en adultos*, or Subjective health capabilities in adults) was designed to capture these subjective health capabilities, inspired in part by ICECAP measures (Coast et al., 2008; Flynn et al., 2015) but considering Ruger's (2010b) HCP and the previous qualitative work in this community (Téllez Cabrera, 2016). The CAPSAS_a instrument has 11 indicators (*see* Table 1) distributed among four dimensions: *health*, with (i) physical, (ii) mental, and (iii) social indicators; *health agency*, comprising the indicators (i) preventive measures to protect health, (ii) health-goal achievement, (iii) knowledge of the effects of traditional medicine, and (iv) ability to acquire health-related information; *access to health services*, comprising the indicators (i) health practitioner availability and (ii) availability of medication and lab tests; and *community*, comprising the indicators (i) community encouragement of healthy lifestyles and (ii) safety in the community. Each indicator used the same, five-level Likert scale (strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree) responding to a proposed affirmative sentence.

Concerning objective information related to health, although both the indicators of dwelling facilities and income were originally part of the dimension of material living conditions, problems eliciting their weights in the pilot study made it more convenient to consider these as two independent dimensions in the final version of the instrument. Hence, the dimension of dwelling

Table 1. Description of dimensions and sub-dimensions of the CAPSAS_a instrument

Health
i) Considering my current health status, I can **do the same things** as most people my age
ii) Although there are problems, I am able to **feel and think positively**
iii) I can have all **love, friendship, and support** I want
Health agency
i) I can **take preventive measures** to protect my health
ii) I can reach all my **health goals**
iii) I know the effects and consequences of using **traditional medicine**
iv) I can obtain all the **health-related information** I need
Access to health services
i) I can be seen by a **health practitioner** if I need it
ii) I can have all the **medicines and laboratory tests** I need
Community
i) The community where I live encourages **healthy lifestyles**
ii) I feel **safe** in my community

Note: Simplified version of the instrument applied to the community, which was administered in Spanish.

facilities comprise two indicators, each constructed from four sub-indicators: dwelling material conditions and space (with the sub-indicators of earthen floor, poor-quality roofing material, poor-quality wall material, and overcrowding; the latter defined as more than 2.5 people sleeping per room) and availability of basic dwelling services (with the sub-indicators of piped-in water, flush-to-piped sewer system, electricity, and cooking fuel). The income dimension, meanwhile, measures the sufficiency of the current monthly monetary (per capita) income to meet food and non-food needs.

The HCS for each individual described here is then formed by 20 indicators (11, 8, and one linked to the CAPSAS_a instrument and dwelling facility and income dimensions, respectively) that must be aggregated into three final indices at both the individual and collective levels. Because an individual health capability index must be interpersonally comparable and must allow aggregation of the different individual values into a wide range of collective welfare functions, it must be constructed with at least the property of interval scale measurability and preferably ratio scale measurability, both with full comparability. While Likert-scaled indicators, like those on the CAPSAS_a instrument, can hardly have ratio scale measurability, they can be treated as having the interval scale property, which allows the use of parametric tests and some admissible statistics in analysing responses (Sullivan & Arthino, 2013). Bearing this in mind, the possible answers on the five-level Likert scale for each of the 11 sub-dimensions of the CAPSAS_a instrument were coded as follows: 0, strongly disagree; 0.25, disagree; 0.5, neither agree nor disagree; 0.75, agree; or 1, strongly agree. This coding is similar to that used by Lorgelly et al. (2008), anchored to a common number (0) to express the lack of that health capability. The remaining nine indicators concerning both dwelling facility and income dimensions were constructed following the methodology employed by the National Council for the Evaluation of Social Policy to measure multidimensional poverty in Mexico (Consejo Nacional de Evaluación de la Política de Desarrollo Social [CONEVAL], 2014) which, in turn, is based on the Alkire–Foster methodology (Alkire & Foster, 2011). This methodology is here inverted, as the purpose is to measure positive indicators, not indicators of deprivation. Thus, the eight indicators in the dimension of dwelling facility are dichotomous variables equal to 0 if a deprivation exists and equal to 1 if no deprivation is found. For example, the indicator of adequate floor material equals 0 if the floor of the person's dwelling is mainly earthen and 1 if otherwise, which would imply sufficiency in that material health-related capability. It can be argued that when an ordinal or ordered categorical variable is dichotomised using a deprivation cut-off, a natural zero is imposed such that the new indicator can be considered trivially to have ratio scale (Alkire et al., 2015). The income dimension, meanwhile, is a dichotomous indicator that is equal to 1 if current monthly per capita household income is equal or greater than $1,756.19 MX (around 90.43 USD from August to December 2016), which is the average of welfare lines established for rural areas for the

period of August to December 2016 (CONEVAL, 2017b). The indicator is equal to 0 if current monthly per capita household income is below this threshold. According to CONEVAL computation, people in this community above this line have sufficient income to meet their food and non-food needs.

Adding to previously published philosophical reasoning and qualitative analysis in the form of practical reasoning (Téllez Cabrera, 2016), an exploratory quantitative exercise was performed to check the appropriateness of the selected indicators of the HCS based on their levels of correlation. Because no dimension or sub-dimension is a continuous variable, tetrachoric, polychoric, and polyserial correlation coefficients were computed for binary–binary, ordinal–ordinal, and ordinal–continuous variables, respectively (Kolenikov & Angeles, 2004).

Aggregation of Indicators

While at the individual level, the index of income coincides with the indicator mentioned above, construction of the CAPSAS_a and dwelling facility indices deserves further explanation. The CAPSAS_a index was obtained using a weighted mean of order 1 function (Decancq & Lugo, 2013) with weights summing up to 1 (a simple weighted average), first within each dimension and later between its four dimensions. This procedure creates interpersonally comparable indices for the four dimensions and the aggregated index, because they range from 0 (no capability) to 1 (full capability), as ICECAP measures, for example, do (Coast et al., 2008; Flynn et al., 2015). The dwelling facility index, as well as its two indicators, were constructed following a union-intersection approach which is widely used by the Venn diagram methodology to assess multidimensional poverty (Alkire et al., 2015). In the first stage, each of its two indicators—for example, dwelling material conditions and space—took a value of 0 if any of its four indicators were equal to 0 and a value of 1 if all of its indicators were equal to 1. Then, the individual index of the dwelling facility dimension was equal to 0 if either the indicator of dwelling facility and space or the indicator of dwelling availability of basic services took a value 0, and it was equal to 1 if both these indicators were equal to 1.

Collectively, each of the three indices was obtained using an arithmetic mean (a weighted mean of order 1 welfare function with equal weights), meaning that the dwelling facility and income indices are headcount ratios indicating the proportion of the population that satisfies health-related capabilities in a sufficient level, while the CAPSAS_a index is a subjective average indicator of health capabilities.

Data Collection

Evaluation of the HCS for the community of Cuanajo was done by means of a survey applied to a random effective sample of n = 171 adult people (aged 18 or older), equivalent to a response rate of 71% of the sample originally designed from a total adult population (according to the most recent available census) of 3,005 (INEGI, 2010). The instrument for collecting data was tested before, and the final version, comprising three sections, obtained sociodemographic indicators (section I), applied the CAPSAS_a instrument (section II), and applied an instrument to elicit the attached weights of the dimensions of the HCS (section III). Notably, while 154 of 171 people answered all the questions needed to compute the proposed indices, section III was answered completely by 119 people (from a subsample of 130) because it required an average of 18 minutes to complete on top of the 40 minutes required by the previous sections (35 and five minutes for the sociodemographic questionnaire and the CAPSAS_a instrument, respectively).

The instrument applied in section III (to know how people value dimensions of the HCS) implemented the point allocation method (Doyle et al., 1997) that considers both the community's low-level education and the cognitive load imposed by weight-elicitation techniques. Each individual was asked to consider a hypothetical situation in which she or he needed to distribute a given number of grain beans among the sub-dimensions, taking into account how valuable each was for her or him. Thus, for example, on the health agency dimension, people distributed 40 grain beans among its four sub-dimensions. This method was implemented for each of the four dimensions of the CAPSAS_a instrument, as well as for the eight combined components of the dwelling facility dimension.

Results

Table 2 shows the sample distribution of the main sociodemographic variables in the community. Notably, according to language, 47% of the adult population can be considered Purépecha, while 99% of the sample identified themselves as Purépecha. With respect to health insurance, the Seguro Popular—the colloquial name for the System of Social Protection of Health implemented in 2004 by the Mexican go-

Table 2. Descriptive statistics by individuals, households, and dwellings (n = 171)

Variable by individual	**Description**	**n**	**(%)**
Age (n = 169)	18–29	78	46.2
[Mean: 36.34, SD: 13.50]	30–59	80	47.3
	60+	11	6.5
Sex (n = 171)	Female	81	47.4
	Male	90	52.6
Education (n = 170)	No schooling	7	4.1
	0–6 years	72	42.3
	7–9 years	64	37.7
	10–12 years	24	14.1
	13+ years	3	1.8
Ethnicity (n = 169, n = 171)	Can speak Purépecha	82	48.5
	Consider herself/himself Purépecha	169	98.8
Marital status (n = 171)	Single	45	26.3
	Married	62	36.3
	Cohabiting (unmarried)	60	35.1
	Widowed	4	2.3
Disability (n = 168)	Any physical or mental disability	8	4.8
	- Motor disability	7	4.2
	- Visual disability	3	1.8
Health access (n = 171)	Any health insurance	89	52.1
	- At least Seguro Popular	82	48.0
	- Other except Seguro Popular	7	4.1
Variable by household	**Description**	**n**	**(%)**
Gender (n = 171)	Household head is female	36	21.1
Ethnicity (n = 171)	Household head speaks Purépecha	79	67.5
Food poverty [a] (n = 171)	Yes	47	27.5
	Quintil	**Mean (MX pesos)**	
Monthly per capita household income[a] (quintiles) (n = 171)	< 807		508
	807 to < 1,154		1,026
	1,154 to < 1,457		1,289
	1,457 to < 1,969		1,722
	1,969+		2,426
Variable by dwelling	**Description**	**n**	**(%)**
Material conditions[b] (n = 171)	Have earthen floor	40	23.4
	Have poor-quality roofing material	81	47.4
	Have poor-quality materials in walls	2	1.2
Overcrowding[c] (n = 171)	Yes [more than 2.5 people sleeping per room]	5	2.9
Basic services (n = 171, n = 170, n = 169)	Have piped-in water	168	98.3
	Have flush-to-piped sewer system	70	41.2
	Have electricity	169	100.0
Cooking fuel (n =171)	Gas	21	12.3
	Firewood	149	87.1
	Charcoal	1	0.6
	- Have a stove with chimney (only if it uses firewood or charcoal)	21	14.0

[a] Computation adjusted by the equivalence scales used by CONEVAL (2014). Food poverty was defined as an income level below the average food poverty line (960.98 MX pesos) for rural areas established by CONEVAL (2017b) for the August–December 2016 period. For comparative purposes, the average exchange rate for this period was 1 U.S. Dollar = 19.42 MX pesos.
[b, c] Definitions of poor-quality materials in roofs and walls and of overcrowding follow CONEVAL's (2014) methodology.
Source: Author calculation based on the administered survey.

-vernment and designed to provide health insurance to groups excluded from the traditional social security system—has covered a gap; without this, 96% of people would not have any insurance. Conditions related to dwellings are also important to consider because these can affect health. Poor-quality roofing and flooring materials represent the principal material deprivations in dwellings (at 47% and 23%, respectively), while lacking a flush-to-piped sewer system and using firewood or charcoal as a cooking fuel in a stove without a chimney are the principal deprivations in basic services (59% and 75%, respectively). Concerning income, 27% and 72% of people in Cuanajo are below the food poverty and welfare income lines, respectively, exceeding the corresponding rates at the national level of 17.5% and 50.6% for 2016, respectively (CONEVAL, 2017a).

Because statistical analysis showed no significant differences in the attached weights of dimensions and sub-dimensions of the HCS, equal weights were used when aggregating indicators (for example, 1/3 for each sub-dimension of the health dimension). Table 3 and Figure 1 show computed indices for the four dimensions of the CAPSAS_a instrument. Table 3 also shows their corresponding sub-dimensions, as well as those for the two sub-dimensions of the dwelling facility dimension, considering individual data available for all indicators (n = 154). The corresponding three final computed indices of the HCS for the community are shown in Table 4. Subjective and objective indices and sub-indices in this work are not comparable, because different methodologies were employed to compute them (an average of the five-level Likert scale indicators for the former and a union-intersection approach for the latter). Thus, comparisons can only be performed between subjective sub-indices on one side and between objective sub-indices on the other both at individual and collective levels.

Table 3. Health capability set, indices and sub-indices (n = 154)

Dimension/sub-dimension	Value	95% CI
CAPSAS_a		
Health	0.79	[0.77, 0.81]
Physical health	0.79	[0.76, 0.82]
Mental health	0.77	[0.75, 0.80]
Social health	0.82	[0.79, 0.84]
Health agency	0.73	[0.71, 0.75]
Preventive measures to protect health	0.78	[0.75, 0.80]
Achievement of health goals	0.71	[0.67, 0.74]
Knowledge of the effects of traditional medicine	0.67	[0.63, 0.71]
Ability to acquire health-related information	0.77	[0.74, 0.79]
Access to health services	0.75	[0.73, 0.78]
Availability of health practitioners	0.77	[0.74, 0.79]
Availability of medication and lab tests	0.74	[0.71, 0.78]
Community	0.77	[0.74, 0.79]
Community encouragement of healthy lifestyles	0.72	[0.69, 0.76]
Safety in the community	0.81	[0.78, 0.84]
Dwelling facility		
Material dwelling conditions and space	0.42	[0.34, 0.49]
Availability of basic dwelling services	0.12	[0.07, 0.18]

Notes: Equal weights were used in computing the four sub-indices of the CAPSAS_a instrument for each surveyed individual.
Source: Author calculation based on the administered survey.

Table 4. Health capability set, indices for the community (n = 154)

Dimension	Value	95% CI
CAPSAS_a	0.76	[0.74, 0.78]
Dwelling facility	0.10	[0.06, 0.15]
Income sufficiency	0.31	[0.23, 0.38]

Source: Author calculation based on the administered survey.

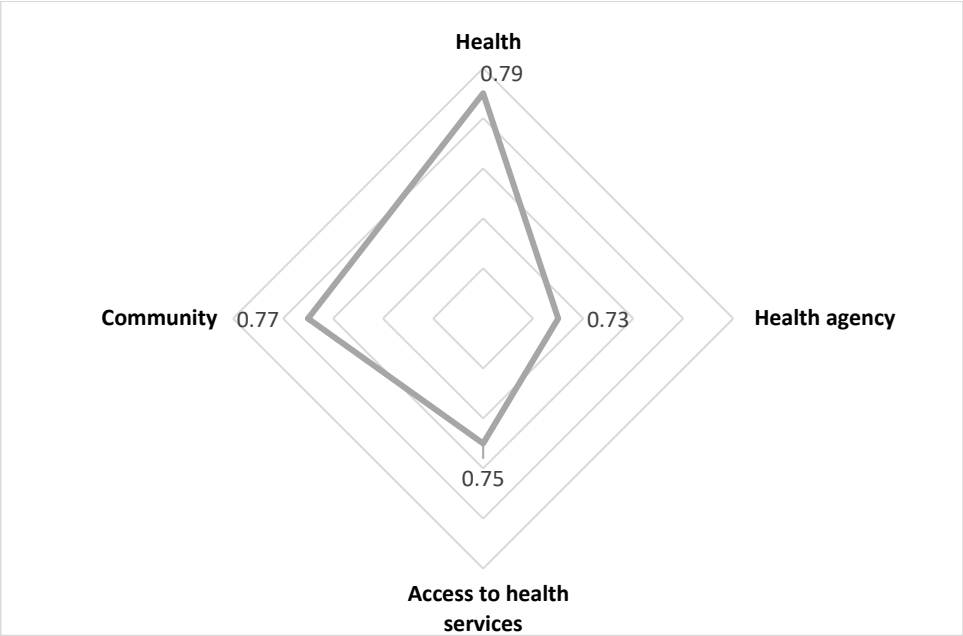

Figure 1. Sub-indices values of the CAPSAS_a instrument using equal weights in Cuanajo

Considering the aggregated index value for the CAPSAS_a instrument was 0.76 [0.74, 0.78], there was no statistically significant difference when comparing using its aggregated four sub-indices (health, health agency, access to health services, and community); however, when comparing using its 11 indicators, differences were found. The lowest values are 0.67 and 0.71 for the indicators of knowledge of the effects of traditional medicine and the achievement of health goals, respectively; on the other hand, the greatest values are 0.81 and 0.82, for the safety in the community and the social domain of health indicators, respectively.

Among objective indicators, a proportion of 0.42 [0.34, 0.49] adult people in the community live in dwellings with floors, roofs, and walls made from adequate materials and that have adequate space, while a proportion of 0.12 [0.07, 0.18] live in dwellings with all four considered basic services. These proportions are below the corresponding national (0.88 and 0.80, respectively) and state (0.85 and 0.76, respectively) levels (CONEVAL, 2017a). This final low result is a consequence of the union-intersection approach employed to generate this indicator; even though all dwellings in the community have electricity, only 25% use gas as a cooking fuel or use firewood or charcoal but in a stove with a chimney. Partially following a social rights approach, as does CONEVAL (2014), only a proportion of 0.10 [0.06, 0.15] of adult people live in dwellings satisfying the combined dwelling facility indicator (adequate dwelling materials and basic services).

Concerning income, a proportion of 0.31 [0.23, 0.38] of the adult population in the community has an income level that allows the satisfaction of their food and non-food needs, which is below the national level (approximately 0.49).

Discussion

Although no great differences among subjective indicators of the CAPSAS_a instrument were found, for this community, notably, the relative lower level of the health agency indicator (*see* Table 3), suggests that public health interventions aiming to develop this and health-related capabilities should be implemented. In particular, attention is needed to increase knowledge of the effects of traditional medicine and to promote health-goal achievement. These quantitative results reinforce previous qualitative work (Téllez Cabrera, 2016), which found (a) that traditional medicine is very important (this sub-dimension was not previously considered but emerged from the interviews) because people tend to use it in cases of infirmity before going to the physician (or even after instead of medication) and (b) that the problem of alcoholism diminishes people's quality of life. In this second respect, the failure to stop drinking (or the lack of ability to drink moderately) is not only related to the health-goal

achievement capability. It is also related to the health-related capability of community encouragement of healthy lifestyles because people reported social pressure to drink not only in Cuanajo's celebrations but also from groups of friends drinking on the street.

While some of the deprivations observed in the dwelling facility indicators can be attributed directly to the failure of local (and national) government duties, others are the result of individual and collective failures in developing health agency. For example, in the previous qualitative work (Téllez Cabrera, 2016), it was found that even though interviewees recognised that using firewood or charcoal to cook without a chimney in the stoves was not good for their health and that in case of having the possibility, they would incorporate the chimney, in practice, few people do it (14%; *see* Table 2). The consequence is that the proportion of people that fulfil the cooking fuel health-related capability (use gas as a cooking fuel or use firewood or charcoal in a stove with a chimney) is only 25%. Concerning income and being its principal sources for Cuanajo, those obtained from sales of artisanal furniture, plants, and embroidery (as well as those obtained from migrant remittances sent by relatives in the United States) the low level of the income sufficiency indicator can be explained in part by people's low productivity linked to alcoholism and recent deforestation.

Taking the different indicator levels together, individually and aggregated into the three final indices, allows identifying transversality of health agency (and of agency in general) in expanding the HCS. Any health-related intervention should be designed holistically not only providing resources but also facilitating the development of abilities, skills, knowledge, and empowerment of people, being respectful of their traditions and values. Thus, for example, instead of providing gas stoves as a mean to increase directly the dwelling facility indicator, a better alternative should let the people decide whether they want a gas stove or a firewood stove (many people would decide this option because they think meals taste better) by providing information about advantages and disadvantages in this decision. Here, counterfactual health-related information considering the impact on one's health and environmental issues such as deforestation—and on the related long-term income consequences—should be provided together with possible ways of action to deal with the impacts.

By promoting participation of the community, individual and collective agency and capability are shaped (Pelenc et al., 2015). When this is complemented with open impartiality during debating (Sen 2009), it is possible to reconstruct Indigenous philosophies that can complement Sen's CA perspective (and the HCPa) and solving the problem exposed by Watene (2016) related to the possibility that the CA fails to capture Indigenous peoples' values. In the health domain, through the lens of the HCPa, health agency can contribute to the reinforcement of community encouragement of healthy lifestyles that could help in dealing with the problem of alcoholism in Cuanajo taking into account traditional medicine and modern medicine but also the kind of life that people have reason to value.

Conclusion

Even though it would be ideal to have a unique index within the CA to assess human development and wellbeing in societies that allows complete ranking of all alternatives, human diversity and heterogeneity in components of the capability set can make this difficult to achieve. Thus, this research combines a direct approach—using partial ranking or distinguished capability comparison variants—with a supplementary approach (Sen, 2000) to assess public health interventions through three indices, instead of aggregating in just one index. This allowed, from a quantitative perspective, to identify that for the Purépecha community of Cuanajo, health agency, community, and dwelling facility dimensions of the health capability set need to be improved to increase people's health-related quality of life through the expansion of people's health capabilities. However, a deeper analysis requires qualitative information and hence, mixed methods represent the best way of doing so. For example, through focus groups, the different dimensions of the health capability set could be evaluated at the same time as the whole is defined, using techniques of participatory statistics (Barahona & Levy, 2003; Holland, 2013). This could impose limits on the problem of adaptation and on the framing effects that can arise from the methodology employed in this work which would also contribute to developing health agency.

While elicitation of weights to be used in aggregation at individual and collective levels is part of the richness of the CA and efforts to developing techniques that also encourage agency must be made (Sen, 2000), the use of equal weights is convenient for operational purposes given the limitation of resources. This fact, together with the methodology employed here to construct the three indices, makes possible to assess health capabilities among Purépecha communities (and maybe other Indigenous communities but having the same indicators), facilitating temporal and spatial comparison between groups and subgroups and between dimensions. This does not imply that a fixed list is here proposed because it is recognised the importance of health agency to expand health capabilities; it only means that these indices can be used for comparative purposes.

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