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Christian Lorenz

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For information, contact: Karen N. Eggleston (翁笙和)

Walter H. Shorenstein Asia-Pacific Research Center
Stanford University
616 Serra St., Encina Hall E311
Stanford, CA 94305-6055
(650) 723-9072; Fax (650) 723-6530
karene@stanford.edu

STANFORD UNIVERSITY
ENCINA HALL, E301
STANFORD, CA 94305-6055

T 650.725.9741
F 650.723.6530

Out-of-pocket household health expenditures and their use in National Health Accounts: Evidence from Pakistan

Christian Lorenz

Abstract Out-of-pocket (OoP) household health expenditures are among the most difficult factors to measure in the context of National Health Accounts (NHA). Yet their measurement is important: OoP household expenditures are typically the first or second largest source of health care financing in developing countries. Their incorrect measurement can undermine the credibility of total health spending estimates and thus NHA statistics, which are an otherwise important resource for policy makers. In most countries, private expenditures account for the biggest margin of error in national health spending estimates and represent the most substantial barrier to reliable international comparisons. Differences in accounting methods explain much of the discrepancy across nations. To further the academic investigation of this important issue, this paper focuses on OoP household health expenditures in Pakistan's NHA and suggests steps toward estimating such expenditures more effectively.

Keywords household expenditure • out of pocket • national health accounts • Pakistan

JEL Classification D1 • I1

Dr. Christian Lorenz
Centre for International Migration and Development
christian.lorenz@gmx.ch

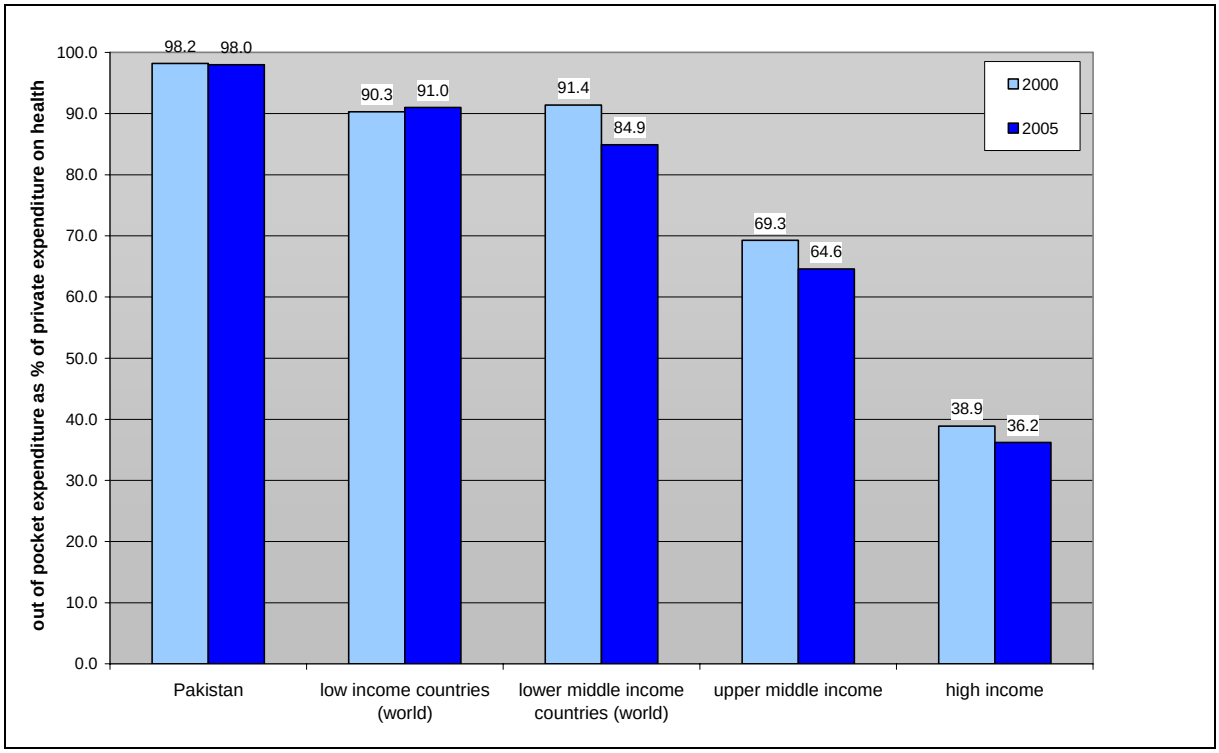
Introduction

Out-of-pocket (OoP) household health expenditures are among the most difficult factors to measure in the context of National Health Accounts (NHA). Yet their measurement is important: OoP household expenditures are typically the first or second largest source of health care financing in developing countries. Their incorrect measurement can undermine the credibility of total health spending estimates and thus NHA statistics—an otherwise important resource for policy makers. In most countries, private expenditures account for the biggest margin of error in national health spending estimates and represent the most substantial barrier to reliable international comparisons. Differences in accounting methods explain much of the discrepancy across nations. To further the academic investigation of this important issue, this paper focuses on the calculation of OoP household health expenditures in Pakistan's NHA.

OoP payments have substantial negative side effects. They may lead to impoverishment and further hardship. The requirement of OoP payments is particularly hard on the poor, whose illness will either remain untreated or force patients into deeper poverty. The poor may not seek medical care and, as a result, remain trapped in the vicious circle of illness and poverty.

OoP expenditures include those of firms, nonprofit organizations, and medical insurance schemes. But outside a few high-income nations, OoP expenditures consist predominantly of private household spending (Rannan-Eliya 2008). In Pakistan, for example, household spending accounted for 98.2 percent of total private expenditures on health in the year 2000 (98 percent in 2005). Overall, private health expenditures as a percentage of Pakistan's gross domestic product (GDP) were small compared with that of other countries (Figure 2), but private expenditures as a percentage of *total* health expenditures were relatively high (Figure 3).

Figure 1 Out-of-pocket expenditures as a percentage of total private health expenditures

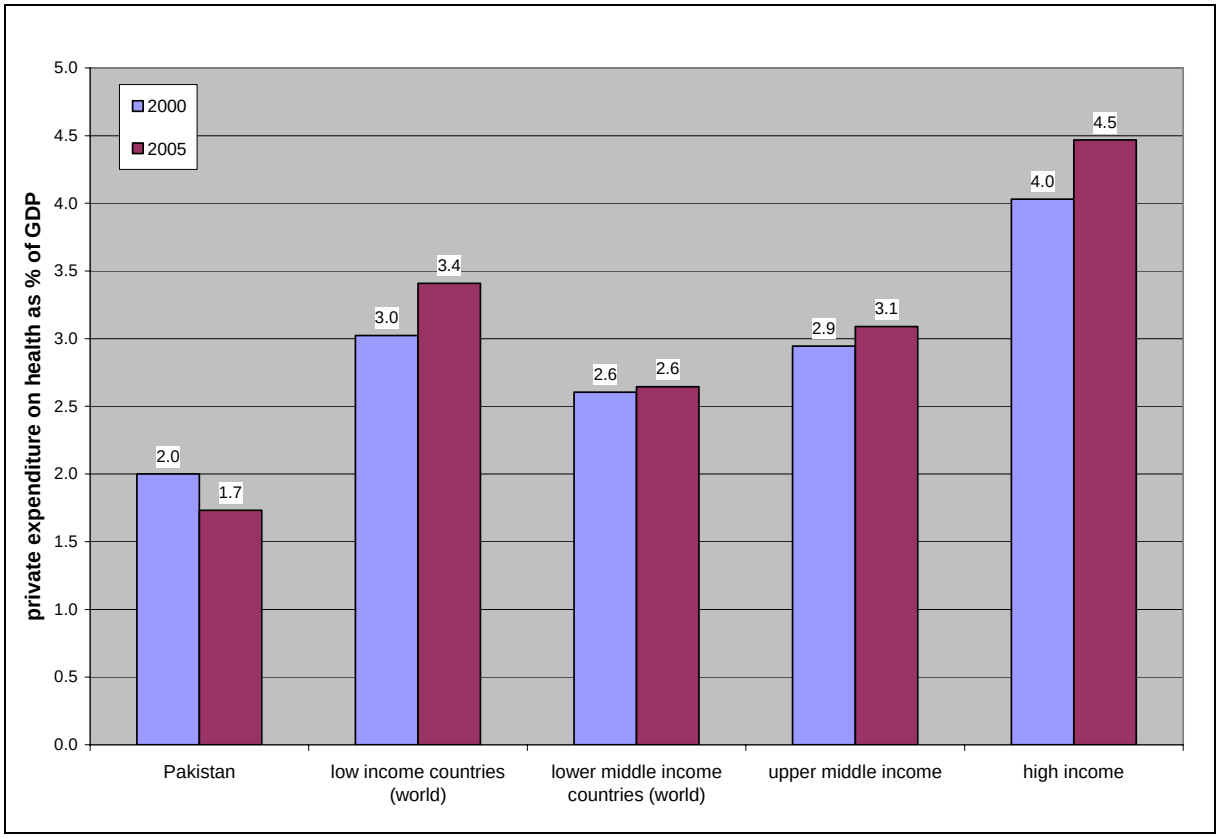


Source: Author's compilation of data from WHO 2008a.

It can be seen from Figure 1 that the share of OoP expenditures as a percentage of total private health expenditures decreases as national income increases. This is because higher-income countries do not rely on OoP expenditures as much as insurance. This point is important because in low-income countries with high OoP expenditure shares and no national or private insurance schemes, illness can easily draw individuals into the poverty trap.

While acknowledging that most national estimates of private expenditure are unreliable, it is still quite clear that they account for 1 to 5 percent of the GDP in most countries.

Figure 2 Private expenditures on health as a percentage of national GDP

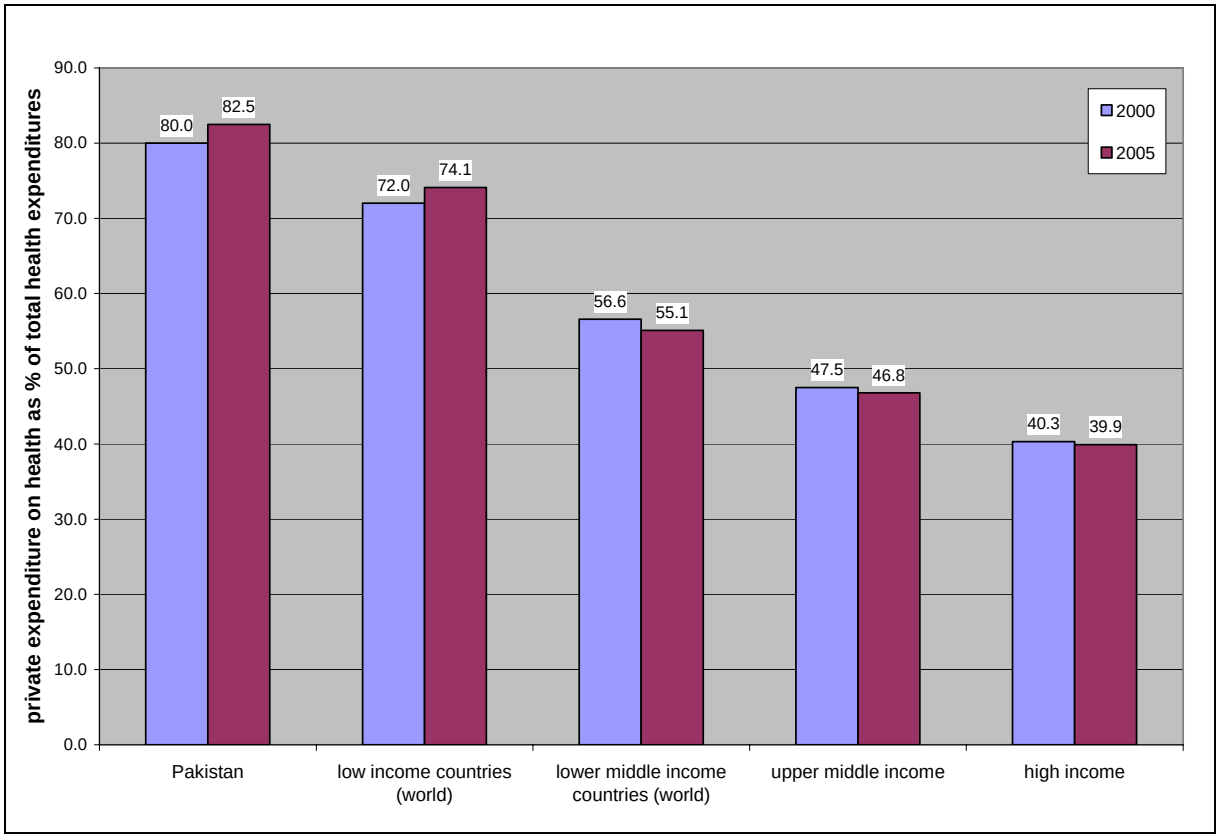


Source: Author's compilation of data from WHO 2008a.

In Pakistan, this share is decreasing—from 2 percent in 2000 to only 1.7 percent in 2005 (an increase in the overall GDP could be partly responsible). In addition, the nation's overall health spending is relatively low compared with that of other nations.

In most low- and lower-middle-income countries, private expenditure accounts for 50 to 75 percent of total health expenditure. But in most middle- and high-income economies, private expenditure accounts for less than 50 percent of the total. The private share of overall spending is much higher in poorer countries than in rich ones, as can be seen from Figure 3.

Figure 3 Private expenditures on health as a percentage of total health expenditures



Source: Author's compilation of data from WHO 2008a.

In Pakistan, 80 percent of total health expenditure in 2000 was private (82.5 percent in 2005). This share was even higher than in most low-income countries, where it was 72 percent in 2000 and 74.1 percent in 2005, on average.

These figures show that the Pakistani government spends little on health compared with other countries. For now, it is not clear whether these figures reflect the real situation in Pakistan or are due to inconsistent calculations. This question can be answered when the NHA for Pakistan are published. These NHA are being produced by the Federal Bureau of Statistics (FBS) and will include all relevant health expenditures as well as the flow from financing sources (via financing agents) to health providers and health functions (FBS 2008).

Calculating private health expenditure

In this section, the author defines important terms, analyzes data from a Pakistani household survey, and explains the use of household expenditure data in the NHA.

Defining private expenditure and household entities

Private expenditure is incurred by organizations or individuals outside the public sector. These may include private firms, households, private health insurance schemes, and nonprofit institutions serving households (WHO 2003b, 57).

Household OoP spending includes gratuities and payments in kind made to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or to the enhancement of the health of individuals or population groups. OoP expenditures include household payments to public services, nonprofit institutions, or nongovernmental organizations (NGOs). OoP expenditures exclude payments made by enterprises that deliver medical and paramedical benefits, mandated by law or not, to their employees (WHO 2003b, 299). Third-party payments, such as insurance, have to be deducted.

Experience in middle- and low-income countries has shown that OoP expenditure often accounts for more than half of total estimated expenditure. Therefore, it is helpful to disaggregate this item further to distinguish between cost sharing at government facilities, copayments and deductibles under health insurance schemes, and fee-for-service payments for treatment, pharmaceuticals, and other inputs (WHO 2003b, 37). For estimation purposes, it is often necessary to estimate the gross level of direct spending before taking into account reimbursements by third-party sources (Rannan-Eliya 2008, 7).

Households pay taxes and insurance premiums and also make OoP payments for medical services. They may also receive monetary reimbursement for outlays they have made, and this inflow should be captured as well. To examine the distribution of spending among various subsets of the population, further household data need to be collected, including income and the total amount spent on goods and services within a given year (WHO 2003b, 72).

Including an expenditure in more than one category should be avoided to keep the margin of accounting error low. For example, estimates should not label a given copayment amount as both an insurance activity *and* an OoP. Such "double counting" will overstate actual expenditure on health care (WHO 2003b, 295).

Household survey data

Economic household data for Pakistan are covered in the Household Integrated Economic Survey (HIES). The universe of the HIES consists of the urban and rural areas of all four provinces, but military-restricted areas have been excluded from the scope of this survey.

The sample size is 15,453 households, deemed appropriate to provide a reliable sampling of key characteristics of both urban and rural areas at the national/provincial levels (FBS 2007a, 21). The sample represents the total population of Pakistan in all areas of the country and covers all kinds of household income (FBS 2007a, 24). Sampling error is an outcome of the inherent variation among specific individuals in any given sample (Rannan-Eliya 2008, 12). Such error will tend to decrease as sample size increases. The potential bias of the HIES is small since it covers more than 13,000 households per health related question, and the critical threshold is 3,000–5,000 households (United Nations, UN, 2005).

Errors due to seasonal variations in health care requirements and expenditure play only a tangential role since the sample is designed to collect data from throughout the year. And consistency is a given: the HIES is conducted every year, with each questionnaire an improvement upon the last. The literature reports that specialized health surveys that focus on only health events and health expenditures can result in overreporting. In other words, more events or expenditures may be reported for a given time period than actually occurred. Household budget surveys, which are conducted to collect data on all types of household expenditure, tend to result in lower estimates of health spending than specialized health surveys, which focus only on health care use (Rannan-Eliya 2008, 14).

Nonsampling errors are found in most surveys and arise from defects in survey design and implementation, or from the inherent limitations of human behavior when responding to survey questions. The most influential limitation is that individuals are rarely able or willing to accurately recall exactly what they did in any given time period.

Errors may arise as a consequence of embarrassment or a wish to conceal information, for example, when surveys seek information about the use of traditional medical providers (*hakims* in Pakistan), which may be associated in some countries with social stigma, or when the illness or health care is itself considered private or sensitive. Another way in which errors can occur is if survey respondents do not understand the survey questions or the survey instrument is too exhaustive, in which case some respondents may learn that not reporting certain events will result in the interview taking less time (Rannan-Eliya 2008, 12f; WHO 2003b, 102). Table 1 shows the health related questions included in the HIES, Pakistan, 2005–6.

Table 1 Health-expenditure-related questions in the HIES

SECTION 6 M HOUSEHOLD EXPENDITURES PART D				
YEARLY CONSUMPTION EXPENDITURE OF THE HOUSEHOLD ON NON-DURABLE GOODS AND SERVICES				
Did household members consume any of the following items during the last 1 year?	**Paid and consumed**	**Unpaid and consumed (report value in whole rupees)**		
(Cross the None box if the item was not consumed)	(Report	Wages and	Own produ-	Receipt from assis-

		value in whole rupees)	salaries in kind consumed	ced and consumed	tance, gifts, dowry, inheritance, or other sources
Item	Code	Value 1	Value 2	Value 3	Value 4
C. Miscellaneous Expenditure a. Medical care	5600				
Purchase of medicines and vitamins, medical apparatus, and other equipment/supplies, etc.	5601				
Medical fees paid to doctors, specialists, and hakeem/midwives outside hospital (including medicines, etc). Hospitalization charges (including fees and other charges for the doctor or hakeem, etc), laboratory tests, x-ray charges, dental care, teeth cleaning and extraction charges, eye glasses, and all others not elsewhere.classified	5602				

Source: FBS 2007a.

The questionnaire on medical care consists of further disaggregated categories that cover (i) medicines purchased and (ii) hospital doctor fees and other medical expenses.

- The first category, "paid and consumed," refers to all cash payments, purchases on credit, or barter (exchange) arrangements for health related goods and services that were consumed during the reference period. The largest consumption in both categories is 43.2 percent for medicines and other medical items and 56.8 percent for fees and other medical items.
- The second category, "unpaid and consumed," consists of income in kind and is classified into three subcategories:

  (i) Wages and salaries paid in kind (provided free of charge by the employer) consumed either at or outside the workplace. In addition to the income in kind received by employees, this category includes consumption items such as a free telephone, car use (for medical reasons), or medical items (such as medicines, vitamins, teeth cleaning, and so on), if applicable (1 percent and 0.8 percent). The valuation of these consumed items should be based on current local market value.

  (ii) The category "own produced and consumed" refers to the items and value of items produced for commercial and noncommercial purposes by household/nonfinancial unincorporated enterprises and utilized for own consumption. General examples are foods produced and used by farm households or shoes made and used by shoemakers during the reference period. A health related example of an own produced and consumed medicine (0.5 percent) is an herbal preparation used by pharmacists. An example of own produced and consumed medical fees (0.1 percent) is for a midwife or nurse caring for the sick within her own household.

  (iii) The third category relates to commodities consumed during the reference period obtained through assistance such as gifts, dowry, inheritance, or other sources of

income (FBS 2007a, 17f). In Pakistan, for example, a large amount of *zakat*—categorized as social assistance—is given from one individual to another and can include health items as well; for example, 1.6 percent for medicine, vitamins, and so on, and another 1.6 percent for medical items.

Table 2 OoP expenditures, including unpaid and consumed medical care

	Health OOP				
		HIES 2005/2006, 256		**HIES microdata**	
		Average monthly per capita expenditure	Share %	Monthly per capita	Share %
	Average number of members per household	6.83			
1	**Medical care**	**65.34**	**100.0**	**65.40**	**100.0**
1.1	**Medicines purchased**	**28.25**	**43.2**	**28.27**	**43.2**
1.1.1	Paid and consumed			26.20	40.1
1.1.2	Wages and salaries in kind consumed			0.68	1.0
1.1.3	Own produced and consumed			0.33	0.5
1.1.4	Receipt from assistance, gifts, dowry, inheritance, or other sources			1.06	1.6
1.2	**Hospital doctor fees and other medical expenses**	**37.09**	**56.8**	**37.13**	**56.8**
1.2.1	Paid and consumed			35.43	54.2
1.2.2	Wages and salaries in kind consumed			0.55	0.8
1.2.3	Own produced and consumed			0.09	0.1
1.2.4	Receipt from assistance, gifts, dowry, inheritance, or other sources			1.06	1.6

Source: Author's calculations based on microdata from FBS 2007a.

Note: The difference in total medical care figures is due to the rounding of disaggregated expenditures.

A household is defined as household members minus those persons who live in the household but are not family members. Of the 101,909 persons who responded to the questionnaire, 93 were not family members. The monthly weighted expenditure (wv_m) of each household is calculated by

$$wv_m = w_j * \frac{v_m}{12} \quad (1)$$

where v_m is the yearly expenditure of every three-digit subclassification (m = [1;4]) multiplied by the weight (w_j), which is given for every PSUj (Primary sample unit). The formula used to calculate the weight assigned to the various primary sampling units (PSU) is as follows:

$$w_{ij} = k * \frac{1}{p_{ij}} * \frac{n_j}{s_j} \quad (2)$$

where w_{ij} is the weight assigned to households in PSU*j* of stratum *i*, k is some constant, p_{ij} is the assigned probability of selection of PSU*j* of stratum *i* (that is, the higher the given probability of selection, the lower the weight given to the PSU), n_j is the number of households in the PSU*j* as found during the listing exercise, and s_j is the number of households in the PSU*j* on which the PPS was based (World Bank 1995, 17f). Sample PSUs from each ultimate stratum/sub-stratum have been selected by probability proportional to size (PPS) method of sampling scheme.

The weighted expenditure is then used to calculate the yearly per capita expenditure (pcv_{kl}) per household *n* on each subclassification *m:*

$$pcv_{mn} = wv_{mn} / pw_{mn} \quad (3)$$

where pw_{mn} is the weight of each household multiplied by the individual household size. The sum of each subclassification per capita expenditure is divided by the number of responding households on the two-digit level question on health. The results of the monthly household expenditures on health are shown in table 2.

Use of OoP expenditures for NHA tables

The figures calculated from the HIES microdata show that unpaid for and consumed items account for about 6 percent of total consumption (about 6 billion Pakistani Rupee). The disaggregated information on the four categories of OoP expenditures provides a deeper look into the amount of OoP expenditures spent in total. OoP expenditures have to be differentiated by financing source, financing agent, and health care provider.

Table 3 OoP expenditures for use in NHA tables

		Financing sources	Financing agents	Providers	Functions
Paid and consumed		X	X		[1]
Unpaid and consumed	Wages and salaries in kind consumed	(X)	X		
	Own produced and consumed	X	X	X	
	Receipt from assistance, gifts, dowry, inheritance, or other sources	(X)	X		
Out-of-pocket expenditures in billion		115.68	121.82	0.78	0

Source: Author's compilation.
Note: X = the collected data in this category can be used in the NHA table given in the column.

With the inclusion of the subcategory "unpaid and consumed" medical care, the amount of OoP expenditures included in the NHA could decrease; otherwise (governmental) social assistance could be counted twice. This also holds for employers' wages in kind in case employers declare these as nonfinancial expenditures.

According to the WHO, OoP expenditures are defined as the direct outlays of households (including gratuities and payments in kind) made to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. OoP expenditures include household payments to public services, nonprofit institutions, or NGOs. On the other hand, OoP expenditures exclude payments made by enterprises that deliver medical and paramedical benefits, mandated by law or not, to their employees (WHO 2003b, 299).

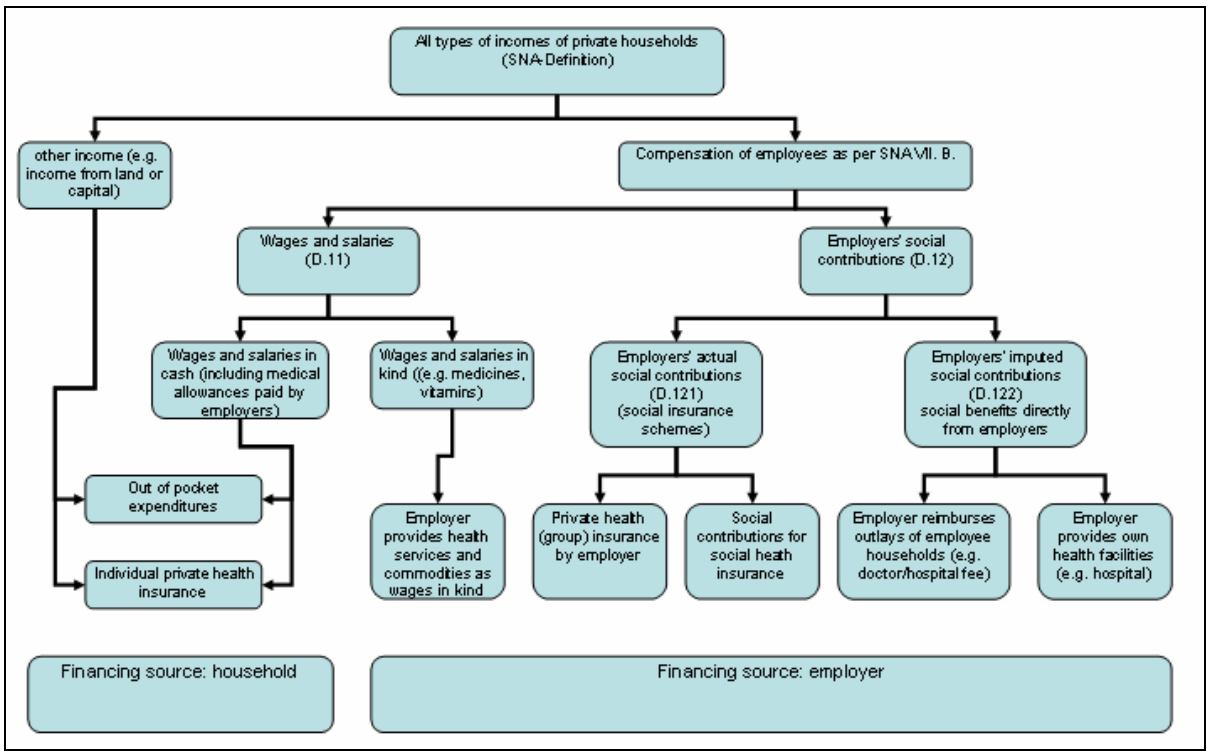
The rationale for introducing the difference between consumption expenditure and actual consumption into the System of National Accounts 1993 (SNA93) is precisely to see the difference between who finances the consumption and who benefits from it. Not recognizing these expenditures in kind would seriously distort the analysis of who pays and who consumes, just at the moment when monitoring the emerging patterns of market behavior is of great importance (UN 1993, 19.33).

Therefore, wages and salaries in kind given from an employer and consumed by a household for health reasons imply that the employer is the financing source. The same holds

[1] How own produced health care is spent is not asked in the questionnaire.

true if an employer purchases health insurance coverage for employees; he then becomes the financial source (WHO 2003b, 7.34).

Figure 4 Households' health related income types



Source: Author's compilation based on Struck 2008, p. 9.

Household health related incomes can, according to SNA93, be categorized in the NHA as "compensations of employees" and "other income." The latter includes income from own business activities, land, or capital and can—together with wages and salaries in cash—be used for OoP expenditures on health as well as for contributions to individual private insurances; the financing source for these expenditures is the household because they are fully disposable. Therefore, the category "wages and salaries in cash" also includes medical allowances, which are disposable income.

Wages and salaries are also paid in kind, such as medicines or vitamins provided as health services and commodities by employers. In addition to wages and salaries, the employee compensation includes employers' actual and imputed social contributions. These categories include employers' contributions to a private health group or social health insurances; reimbursements of outlays made by employee households, such as doctor's fees; and health facilities, such as hospitalization provided by the employer. The financing source is the employer, because these income types are not disposable for the household.

This leads to a (part) exclusion of the category “wages and salaries in kind.” In case of a household selling some part of its salary in kind to other households, the profit becomes disposable, as does OoP expenditures for the seller; this example, in general, should not be included in the category “unpaid and consumed.” For this reason, it is important to account for these kinds of details.

Regarding assistance, it is important to mention that if it is received by the household, then the giving body (private individual, government, and so on) is the financing source. In the case of a private individual, the household, government, or *zakat* giver is the source. Gifts, dowry, and inheritance will most often be given from household to household, but the share of official *zakat* would be counted twice without part exclusion of this category. *Zakat* means “alms for the poor,” in accord with the Islamic principle of giving a percentage of one’s income to charity. In Pakistan, *zakat* is organized and distributed by the Ministry of Religious Affairs and comprises a large part of the nation’s social assistance.

Depending on some survey limitations it can be difficult to decide whether the expenditures have to be included in NHA or not. Households pay taxes and insurance premiums, and also make OoP payments for medical services. They may also receive money in the form of reimbursement for outlays they have made, and the data sources must be able to capture these flows of money as well (WHO 2003b, 6.23). The recall period is very long and it is questionable whether the respondent is able to remember whether he got reimbursed by his insurance or employer for his payment. Officially, reimbursements should not be included in the OoP expenditures, but the perception of the respondents could differ. Therefore, it depends on the perception of the respondent how his payment is counted. The subclassifications are not defined sufficiently to decide whether they are already counted on the assistance or employer side; this might be improved in future questionnaires.

Insurer records can be used to generate estimates of household copayment amounts or of amounts reimbursed to households by insurers. Applying coinsurance rates to benefit payments can establish a first estimate of copayments, although an allowance must be made for patients defaulting on payments and for deductible amounts as well as copayments. Correcting household expenditures for amounts received as reimbursement from insurers or public programs has proved to be an important part of developing a more realistic model of the actual health care financing system. These transfers must be considered in both household survey designs and other complementary data collection to avoid large errors in estimation (WHO 2003b, 7.46).

The figures that should be used in the NHA for sources, agents, and functions are given in Table 3. They are calculated by multiplying the monthly per capita expenditures of the relevant subclassification by twelve, multiplied by the total population of Pakistan. The total population is given in several publications, which differ in their estimates (see Table 4).

Table 4 Estimations of Pakistan's total population and the OoP expenditures on health

Source	Total population 2005–6 in million	Total OoP expenditures (incl. all subclassifications) in billion
Ministry of Finance (MOF), Pakistan Economic Survey 2007–8, 202	155.37	121.823
WHO (2008b), Estimates for country NHA data		average 112.986 (2005) and 128.892 (2006) =120.939
FBS, Pakistan Statistical Yearbook, 2007, table 16.1	Average of 151.55 (2005) and 155.36 (2006) = 153.46	120.321

Source: Author's calculations based on the sources given in the table and OoP expenditure figures published in the HIES.

The figures given in the FBS yearbook do not accurately reflect the fiscal year 2005–6. In the WHO data, the population used in the calculation is not given and the figures for 2005 result from imputations (WHO 2008b). For the calculations in Table 3, the population figure 155.37—based on the economic survey—is applied.

Conclusions

OoP health expenditures in Pakistan include a high share (98 percent) of private health expenditures. Overall, the private expenditures on health as a percentage of the GDP are small compared with that of other countries. The share of the private expenditures on health as a percentage of total health expenditures is relatively high in a global context.

Parts of the household expenditures on health should be analyzed carefully before inclusion in the NHA to avoid double counting. Pakistan's economic survey puts OoP expenditures into four subcategories: (i) paid and consumed; (ii) wages and salaries in kind, consumed; (iii) own produced and consumed; and (iv) assistance such as gifts, dowry, inheritance, or other sources.

The questionnaire has to be improved to identify the source of the money used. With the existing information, salaries in kind should be excluded from OoP expenditures if they are consumed by the same household (and not sold further); in this case, the financing source is not the household itself but the employer. The same holds true for assistance, which should be excluded from the NHA if given by the government.

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