The impact of user fees on health service utilization in low- and middle-income countries: how strong is the evidence?

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Objective To assess the effects of user charges on the uptake of health services in low- and middle-income countries.
Methods A systematic search of 25 social science, economics and health literature databases and other sources was performed to identify and appraise studies on the effects of introducing, removing, increasing or reducing user charges on the uptake of various health services in low- and middle-income countries. Only experimental or quasi-experimental study designs were considered: cluster randomized controlled trials (C-RCT), controlled "before and after" (CBA) studies and interrupted time series (ITS) studies. Papers were assessed in which the effect of the intervention was measured in terms of changes in service utilization (including equity outcomes), household expenditure or health outcomes.
Findings Sixteen studies were included: five CBA, two C-RCT and nine ITS. Only studies reporting effects on health service utilization, sometimes across socioeconomic groups, were identified. Removing or reducing user fees was found to increase the utilization of curative services and perhaps preventive services as well, but may have negatively impacted service quality. Introducing or increasing fees reduced the utilization of some curative services, although quality improvements may have helped maintain utilization in some cases. When fees were either introduced or removed, the impact was immediate and abrupt. Studies did not adequately show whether such an increase or reduction in utilization was sustained over the longer term. In addition, most of the studies were given low-quality ratings based on criteria adapted from those of the Cochrane Collaboration's Effective Practice and Organisation of Care group.
Conclusion There is a need for more high-quality research examining the effects of changes in user fees for health services in low- and middle-income countries.

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Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

Access to basic health services of acceptable quality is still denied to many of the world's poorest people.[1] Against a backdrop of severely underfunded health systems,[1,2] governments are faced with a dilemma. Payments for health services, in the form of user charges, are likely to present a barrier to access. Yet, a shortage of resources at the facility level is a contributor to failure to deliver quality services, and this also presents a barrier to access. Some have argued that user charges can generate vital resources at the local level and help provide good quality services;[3–5] others have highlighted their negative effects, particularly on equity;[6–9] Recently, several international campaigns have advocated the removal of user fees, especially for primary care services.[1,10]

Some recent articles have underlined the paucity of evidence on the effectiveness of policy interventions in low-income countries;[11,12] others have noted the importance of systematic reviews for understanding health systems.[13] Despite the central importance of the user-fee debate, no systematic review has examined the quality of the empirical evidence on this topic. To redress this imbalance, this review set out to assess the quality of the existing evidence on the impact of user fees on health service utilization, household expenditures and health outcomes in low- and middle-income countries.

Methods

Scope of the review

User fees refer to a financing mechanism that has two main characteristics: payment is made at the point of service use and there is no risk sharing. User fees can entail any combination of drug costs, supply and medical material costs, entrance fees or consultation fees. They are typically paid for each visit to a health service provider, although in some cases follow-up visits for the same episode of illness can be covered by the initial payment. This review aimed to assess the effect on health service utilization of introducing, removing, increasing or decreasing user fees in low- and middle-income countries.

Search strategy and inclusion criteria

We searched 25 databases covering the social science, economics and health literature. We also searched the reference lists of all relevant articles, the web sites of related research centres or institutions (lists of sources searched are available from the authors upon request) and existing reviews.[14–19] The search strategy combined looking for terms in subject headings and within the text pertaining to health financing

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Table 1. **Inclusion criteria applied in review of studies of the effects of user fees on health service utilization in low- and middle-income countries**

Type of intervention	A change in the payment required from patients at the point of service delivery
Outcome measures	Utilization of services (including equity outcomes) Health expenditures Health outcomes
Study setting	Low- and middle-income countries (as defined by The World Bank) Preventive and curative services, all levels
Study design	C-RCT CBA study ITS study – two criteria had to be met: • analysis using ITS method, or allowing access to the data series for reanalysis • providing routine data (weekly, monthly or quarterly)[a] over a period long enough to provide at least 10 data points before and after the policy change[b]

CBA, controlled "before and after"; C-RCT, cluster randomized controlled trial; ITS, interrupted time series.
[a] Yearly data were discarded on the grounds that they would not provide detailed information or capture the moment of change.
[b] This criterion was added to limit the biases that would arise from analysing a very limited dataset.

("health financing", "user charges", "user fees", "cost recovery", "direct payment", "drug revolving fund", "fee") and outcomes ("utilization", "access to services", "health expenditures", etc.). No limitation on date or publication language was applied. Only studies from low- and middle-income countries, as defined by the World Bank, were included.

Only experimental or quasi-experimental study designs were included – cluster randomized controlled trials (C-RCTs), controlled "before and after" (CBA) studies and interrupted time series (ITS) studies (Table 1) – as suggested by the Effective Practice and Organisation of Care (EPOC) group of the Cochrane Collaboration, where this review was registered. Indeed, such designs are known to provide the most reliable measures of effect. Papers were assessed only if the effect of the intervention was measured in terms of either changes in utilization, household expenditure, health outcome or equity. Both authors independently sifted the titles and abstracts of publications for retrieval. In case of disagreement, full-text articles were retrieved and examined. All retrieved articles were then independently reviewed by the two authors, and agreement was reached over whether they fulfilled the criteria for inclusion in the review.

Reanalysis of data

We found several studies that had longitudinal data on utilization but had not performed a time series analysis.[20–26] To be able to include these, we relaxed the original definition of ITS[27] (Table 1) and set out to reanalyse the data appropriately. When they were not directly reported in the paper, original data series were requested from the authors. Whenever the authors could not be found or did not respond, we attempted to reconstruct data series by scanning graphs.[1]

Data series were then examined with the following segmented regression model to control for secular trends and potential serial correlation of data, and to detect any significant changes after the introduction of the new policy:

$$Y_t = \beta_0 + \beta_1 \times \text{Preslope} + \beta_2 \times \text{Intervention} + \beta_3 \times \text{Postslope} + \varepsilon_t$$

where Y_t is the outcome variable at time t. Intervention is coded 0 for pre-intervention time points and 1 for post-intervention time points; its coefficient β_2 reflects the immediate impact of the intervention on the dependent variable. Preslope is a continuous variable indicating time from the start of the study up to the intervention (if the intervention occurred at the nth period, preslope is coded sequentially from 1 to n before the intervention and remains equal to n for the rest of the series). It thereby captures the structural trend that has started before the intervention. Postslope is coded 0 up to the last point before the intervention phase and coded sequentially from 1 thereafter. Its coefficient β_3 therefore reflects the trend or growth rate in outcome after the intervention. When auto-correlation was detected by the Durbin-Watson test, it was corrected with a PraisWinsten regression.

In addition, to provide more comparable results, we computed price elasticities (e_p) for studies reporting changes in user fees, and "net" elasticities for those with a control site. We also computed the statistical significance of the observed effects if it was not reported in the original paper.

Data extraction and quality assessment

Quality criteria were adapted from those suggested by the EPOC group of the Cochrane Collaboration (Table 2). When a study presented unsatisfactory or unclear elements for two or more criteria, it was scored as being of "low" quality. When only one criterion was unclear or unmet, it was scored as being of "moderate" quality, and when all elements were satisfied, the study was considered as being of "high" quality. For each included study, both authors extracted data and assessed quality. They then reviewed one another's conclusions. Discrepancies were resolved by discussion.

Description of studies

The initial database search generated over 24 000 references. An initial sift of titles and abstracts led to the inclusion of 243 documents for further investigation (Fig. 1 provides more details on the

Table 2. **Quality assessment criteria applied to studies included in review of the effects of user fees on health service utilization in low- and middle-income countries**

C-RCTs	Random allocation is clearly described (unit and process). Outcomes are measured at baseline. Outcome measures/data are reliable. There is no risk of exclusion bias. There is no risk of detection bias. There is no risk of contamination. The sampling strategy takes clusters into account (for C-RCTs).[a] Appropriate statistical analysis is (well) performed.[a]
CBA studies	Control and intervention sites are comparable. Outcome measures/data are reliable. There is no difference in outcomes between control and intervention sites at baseline. There is no exclusion or selection bias. There is no risk of contamination. Appropriate statistical analysis is (well) performed.[a]
ITS studies	There is no risk that concurrent changes/events might have affected outcomes. There is no risk of selection bias. There is no risk of detection bias. Outcome measures/data are reliable. Time of the intervention is clearly defined. Appropriate statistical analysis (ARIMA model or time series regression) is performed. Rationale for the number of points in the series collected is stated (and sufficient to control for the effects of potential seasonal variations in outcomes before and after).[a]
Overall quality assessment	There is a low risk of bias: all criteria are clearly met. There is a moderate risk of bias: one or two criteria are not clear or not met. There is a high risk of bias: more than two criteria are not clear or not met.

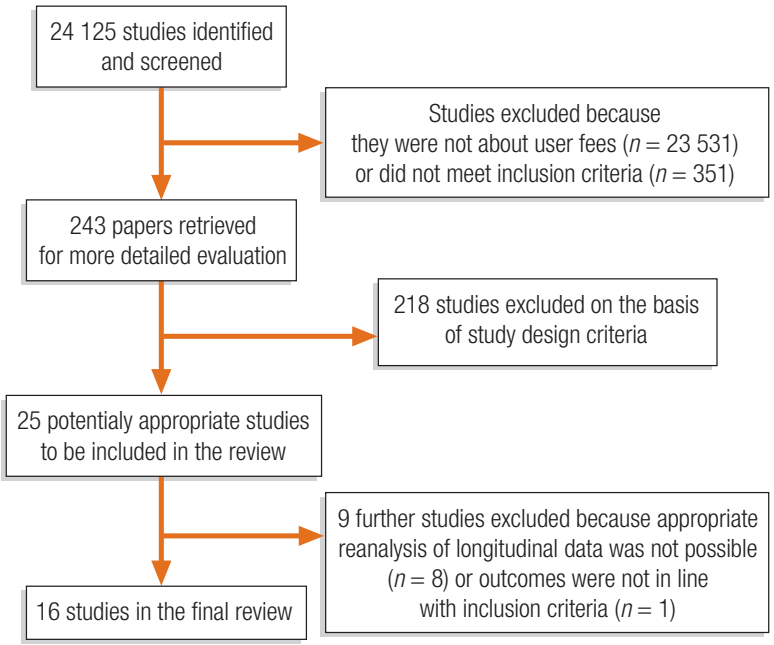
ARIMA, auto-regressive integrated moving average; CBA, controlled "before and after"; C-RCTs, cluster randomized controlled trials; ITS, interrupted time series.
[a] Criterion added by the authors to the list of those suggested by the Cochrane Collaboration's Effective Practice and Organisation of Care group.

search strategy). Sixteen studies met our inclusion criteria. We only found studies reporting effects on health service utilization. None reported an effect on expenditures or health outcomes, and two reported effects on utilization by different socioeconomic groups.

Eight papers presented data on the effects of introducing user fees (Table 3), five on the effects of removing fees (Table 4) and five on the effects of decreasing or increasing fees (Table 5 and Table 6). Some papers reported results from specifically designed studies,[4,28–32] while others sought to analyse the effect of nationally- implemented strategies using routine data.[20–26,33–35]

Study settings varied considerably (type of service, type of facility, type of payment). A range of utilization measures were reported as outcomes, including new visits, registrations, weekly/quarterly/monthly attendance, outpatient and/or inpatient attendance. As a result, a narrative approach to reporting the results has been adopted.

Fig. 1. **Synthesis of study identification[a] in review of the effects of user fees on health service utilization in low- and middle-income countries**



[a] Point coordinates were recomposed from a digital scan of the graphs. Whenever possible the results obtained were checked with data from the papers and discrepancies were never greater than 1%.

Table 3. **Main characteristics of studies on the introduction of user fees and its effects on health service utilization in low- and middle-income countries, according to literature review**

Study	Study setting	Study design	Intervention	Quality assessment	Overall risk of bias
Ridde (2003)[20]	Burkina Faso – 9 intervention and 5 control health centres	ITS[a]	Introduction of user fees in PHC facilities compared with some control facilities. National policy change	Presence of confounding factors; differences in control and treatment groups; time of intervention varied slightly across facilities; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Mbugua et al. (1995)[21]	Kenya – 1 hospital and 2 health centres and 3 free dispensaries (control)	ITS[a]	Introduction of user fees in hospitals and health centres. National policy change	Presence of confounding factors; few observation points; control sites not equivalent; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Collins et al. (1996)[22]	Kenya – 4 district hospitals and 3 provincial hospitals	ITS[a]	Introduction of user fees in hospitals and health centres. National policy change	Presence of confounding factors (economic hardship); few observation points; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Moses et al. (1992)[24]	Kenya – Nairobi's special treatment clinic for STIs	ITS[a]	Introduction of user fees in the national referral structure for STIs. National policy change	Presence of confounding factors; few observations after the intervention; specific to one referral centre for STIs; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Benjamin et al. (2001)[23]	Papua New Guinea – 1 general hospital and urban clinics (controls)	ITS[a]	Introduction of user fees for antenatal care in a hospital. National policy change	Presence of confounding factors; potential secular changes; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Kremer & Miguel (2007)[32]	Kenya – 75 schools (25 randomly selected to introduce cost recovery)	C-RCT	Introduction of user fees for preventive deworming drugs. Experimental study	Slight difference in time of pre-intervention exposure to free drugs between some control and intervention sites	Low
Diop et al. (1995)[29]	Niger – primary care facilities in 3 districts (2 intervention sites, 1 control)	CBA	Introduction of user fees + quality improvements in PHC facilities. Pilot study	Differences in control and intervention sites (potentially affecting health-seeking behaviours); pre-existence of informal fees in the control sites; statistical analysis not always appropriate	High
Litvack & Bodart (1993)[4]	Cameroon – 5 health centres (2 control, 3 intervention)	CBA	Introduction of user fees + quality improvements in PHC facilities. Pilot study	Selection of control and treatment facilities unclear; no details provided on characteristics of treatment and control sites; statistical analysis not always appropriate (failure to test for statistical significance of comparisons; inappropriate econometric analysis of variations across socioeconomic groups)	High

CBA, controlled "before and after"; C-RCT, cluster randomized controlled trial; ITS, interrupted time series; PHC, primary health care; STIs, sexually transmitted infections.
[a] Longitudinal data were reanalysed by the authors of the review, so that the results do not necessarily reflect the conclusions and views of the authors of the original paper.

Findings

Impact of removing user fees

Five studies used longitudinal data to report the effects of abolishing user fees on utilization. These were all reanalysed.[22,24–26,35] Results from the reanalysis confirm an abrupt increase in the utilization of curative services following fee removal (Table 7, available at: http://www.who.int/bulletin/volumes/86/11/07-049197/en/index.html). This abrupt increase was rarely followed by a sustained increase in utilization growth. In most instances, no significant change was recorded in attendance for preventive services,[22,24,35] which were usually already free. However, several data series showed that after fees were removed, the growth in preventive service utilization significantly increased (or, in South Africa, declined at a more modest rate), which could be interpreted as a long-term trickle-down effect of fee removal (Table 7). However, the quality of the data from which these conclusions were drawn was judged to be low due to the presence of confounding factors (concurrent policy changes), the questionable quality of routine data or small sample sizes.

Impact of introducing user fees

Eight studies examined the effect of introducing user fees: two CBA studies,[4,29] one C-RCT[32] and five ITS

Table 4. **Main characteristics of studies on abolishing user fees and its effects on health service utilization in low- and middle-income countries, according to literature review**

Study	Study setting	Study design	Intervention	Quality assessment	Overall risk of bias
Burnham et al. (2004)[25]	Uganda – sample of 78 public facilities from 10 districts	ITS[a]	Abolition of user fees in PHC facilities. National policy change	Important confounding factors and changes occurred at the same time; few points before; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Nabyonga et al. (2005)[35]	Uganda – sample of public facilities (13 referral hospitals and 59 health centres) and private facilities	ITS[a]	Abolition of user fees in PHC facilities. National policy change	Important confounding factors and changes occurred at the same time; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Wilkinson et al. (2001)[26]	South Africa – a mobile unit in KwaZulu/Natal	ITS[a]	Abolition of user fees in PHC facilities. National policy change	Many confounding factors; selection bias for the unit of analysis (1 mobile unit whose catchment area varies during the study); use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Collins et al. (1996)[22]	Kenya – 4 district hospitals and 3 provincial hospitals	ITS[a]	Abolition of (recently introduced) user fees in hospitals and health centres. National policy change	Presence of confounding factors, few observations for different stages; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Moses et al. (1992)[24]	Kenya – Nairobi's special treatment clinic for STIs	ITS[a]	Abolition of (recently introduced) user fees in the national referral structure for STIs. National policy change	Presence of confounding factors; few observations before the intervention; specific unit of analysis (referral centre for STIs); use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High

ITS, interrupted time series; PHC, primary heath care; STIs, sexually transmitted infections.

[a] Longitudinal data were reanalysed by the authors of the review, so that the results do not necessarily reflect the conclusions and views of the authors of the original paper.

studies.[20–24] ITS studies suggested that policies that introduced user fees decreased health service uptake (Table 8, available at: http://www.who.int/bulletin/volumes/86/11/07-049197/en/index.html). Indeed, the reanalysis showed a sharp single step down in utilization levels for curative services in Kenya.[21,22,24] A similar, though less significant change was observed in Burkina Faso.[20] Data from Papua New Guinea[23] showed a decrease in utilization of preventive services, more striking when compared to the concomitant utilization increase in free facilities. Although growth in service uptake was often greater after the policy change, suggesting potential positive outcomes in the long run, this was not a statistically significant result. Again, the quality of the data and analysis from which these conclusions were drawn was judged to be low. In particular, in all cases changes in fees occurred at the same time as economic crises and/or other changes in the health system, reducing the extent to which one could attribute changes to fees alone.

The two CBA studies[4,29] examined the effects of introducing user fees alongside quality improvements, and both found that this increased utilization for the poorest groups. However, both studies also had significant weaknesses in terms of design and analysis. In a C-RCT of good quality, Kremer and Miguel[32] showed that uptake of worm-prevention treatment in Kenyan schools fell from 75% to 19% after fees were introduced. In a regression analysis, the authors found that the introduction of cost-sharing was responsible for the major part of this reduction in uptake.

Impact of decreasing user fees

Evidence from two studies[28,31] on the effect of decreasing fees suggested an increase in utilization (Table 9). Abdu et al.[31] found that decreasing user fees by 25% and 75% led to a more than proportionate change in the number of pregnant women and children seen in health centres in the Sudan. This study again has several methodological limitations.[31] Ojeda et al.[28] reported that decreasing the price of intrauterine devices in Colombia led to an increase in the number of users and indicated a highly sensitive price elasticity of demand. However, high inflation at the time in Colombia may have caused people to overestimate the real fall in price.

Impact of increasing user fees

We included three studies reporting the effects of increasing user fees. One[33] studied an increase of user fees in the public sector (Table 8) and two[30,34] studied their effect in private facilities (Table 10). Data from Lesotho[33] showed that increasing user fees led to a drop in utilization in the public sector, while uptake of services in private not-for-profit facilities did not change. In Gabon,[34] data from two increases in fees in a private hospital showed that demand became increasingly sensitive to price, which suggests a threshold effect. An experiment in Ecuador[30] found that demand for reproductive health

Table 5. **Main characteristics of studies on reducing user fees and its effects on health service utilization in low- and middle-income countries, according to literature review**

Study	Study setting	Study design	Intervention	Quality assessment	Overall risk of bias
Ojeda et al. (1994)[28]	Colombia – 4 groups of 3 clinics (1 control, and 3 interventions)	CBA	Decrease of charges for a contraceptive implant	Net prices may be misleading due to inflation; some minor differences between baseline and control groups; statistical significance computed by the reviewers	High
Abdu et al. (2004)[31]	Sudan – 6 public health centres (2 × 3 interventions) and 2 control ones	CBA	Decrease of user fees in PHC facilities	Important differences between control site and treatment sites (catchment area size, rural/urban, outcome results); limited sample size for women at baseline; inappropriate statistical analysis (and no significance level computed)	High

CBA, controlled "before and after"; PHC, primary health care.

services (obstetric-gynaecological, antenatal care) in private clinics was inelastic to changes in prices. However, this study was again subject to limitations due to confounding factors (high inflation may have confused real price variations) and a failure to follow the initial experimental design.

Discussion

This review is the first attempt to systematically assess the quality of existing evidence on the subject of charging for health services in low-income countries. It differs from previous reviews[15–17] in using a formal protocol and systematically appraising the evidence.

Main findings

There is some limited evidence from the papers reviewed to suggest that removing user fees increases the utilization of curative health-care services, usually in the form of one sharp step-up following fee removal. This policy change may also have a positive impact on the uptake of preventive services in the long run.

As for the introduction of user fees, there is limited evidence that it decreases utilization, again in the form of one sharp reduction. It is unclear from any study if this effect extends beyond this initial drop. Two studies suggested that the combination of user fees and improvements in quality can increase utilization.

These findings broadly support the view that user fees present a barrier to access to curative health services for those groups that would be eligible to pay for them. They concur with those of some of the non-systematic reviews on user fees that have been completed.[15–17] However, we feel that there are several important questions in this area that remain unanswered, and it is important to note that all but one of the studies had significant weaknesses.

Weaknesses of the available evidence

It must be stressed that the quality of the available evidence was low. One study[32] was found to be of good quality, while all others were potentially biased. Even studies that have been highly influential and often quoted[4,29] failed our quality appraisal. A particular weakness was that only two studies looked at differential impact across population groups.[4,29] Most studies on routine data could not assess the equity impact of the reforms described.

Most studies providing longitudinal data (and reanalysed as ITS) were

Table 6. **Main characteristics of studies on increasing user fees and its effects on health service utilization in low- and middle-income countries, according to literature review**

Study	Study setting	Study design	Intervention	Quality assessment	Overall Risk of bias
Bennett (1989)[33]	Lesotho – 4 district hospitals and 3 private not-for-profit (controls from a unique district)	ITS[a]	Increase of user fees in PHC facilities with some control data	Limited data (weekly series over 1 year) cannot account for seasonal variations; no information on contextual factors; intervention and control sites not equivalent; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Issifou & Kremsner (2004)[34]	Gabon – a private (for profit) hospital and a public one (control)	CBA	Increase of consultation fees in a private hospital	Non-equivalence of intervention and control sites; use of routine data, potentially unreliable; data reanalysed to account for their longitudinal nature	High
Bratt et al. (2002)[30]	Ecuador – 5 blocks of 3 clinics each (each block has 2 treatment sites and 1 control)	C-RCT	Increase of user fees for reproductive health services in private not-for-profit clinics – pilot study	Limited number of clusters; clustering effects mentioned (and controlled for) in only one analysis; discrepancies between control and intervention groups; biased sample (clinics' patients are better off than national average)	High

CBA, controlled "before and after"; C-RCT, cluster randomized controlled trial; ITS, interrupted time series; PHC, primary health care.

[a] Longitudinal data were reanalysed by the authors of the review, so that the results do not necessarily reflect the conclusions and views of the authors of the original paper.

Table 9. **Effects of reducing user fees on health service utilization in low- and middle-income countries, according to literature review**

Study	Outcome measure	Percent variation in fee	Reanalysis for the systematic review					Conclusions presented in the original study
			Percent change in intervention area(s)[a]	"Absolute" elasticity[a]	Percent change in control area(s)	Percent change in intervention areas	"Relative" elasticity	
Abdu et al. (2004)[31]	Number of children seen in health centres for malaria	−25	+63.6***	−2.5	+31	+32.6	−1.3	Increase in use of services; lesser increase in facilities offering 50% exemption perhaps due to lack of health personnel
		−50	+32.3***	−0.6	+31	+1.3	−0.02	
		−75	+280.4***	−3.7	+31	+249.4	−3.3	
	Number of pregnant women seen in health centres for malaria	−25	+52.1***	−2.1	+6.2	+45.9	−1.8	
		−50	+27.9***	−0.6	+6.2	+21.7	−0.43	
		−75	+131.4***	−1.7	+6.2	+125.2	−1.7	
Ojeda et al. 1994[28]	Number of monthly new IUD users[b]	−25	+254.8***	−10.2	+72.6	+182.2	−7.3	Increase in the number of users
		−50	+287.3***	−5.7	+72.6	+214.7	−4.3	
		−25	+236.5***	−9.5	+30.8	+205.7	−8.2	
		−50	+241.2***	−4.8	+30.8	+210.5	−4.2	

Significance levels (computed for the review when possible): *** $P < 0.001$.
IUD, intrauterine device.
[a] In the original paper by Abdu et al.,[31] this is defined as the "correlation coefficient between the level of exemption and relative increase of cases of malaria seen".
[b] The first two rows compare changes between the period September 1991–February 1992 and September 1992–February 1993, while the last two compare the periods of March–August 1992 and March–August 1993.

unable to isolate changes in charges for health services from other concurrent changes occurring in, or outside of, the health system. A similar problem in two experimental studies was that high inflation may have confused the effects of price variations.[28,30] A key problem for the CBA studies was non-equivalence between control and intervention sites (Table 3 and Table 4). In one study there may also have been problems controlling whether free care was really free in control areas.[36]

These quality shortcomings, in combination with such a limited number of studies on each topic, mean that many questions remain. Key questions include the effects of fee changes on the quality of care, drug use and health worker motivation as well as utilization. The question of which patients increase or decrease their utilization of health services, and for what health conditions, is also almost totally unanswered. The longer term impacts of fee introduction or removal have also not been adequately measured. There are many difficulties associated with answering such questions in the "noisy" setting of health systems. However, there remains considerable scope for improvement in the quality of research and analysis around this area.

Strengths and weaknesses of the review

This review is the first of its type to address such an important policy question for health financing. The scope of the review was wide. Some papers dealt with the change in price of a specific good, while others dealt with charges for basic health services more generally. Studies also covered both public- and private-sector charges. Some are the result of specially-designed experiments; others are attempts to study the effects of a "real world" policy change. The result is that our findings are heterogeneous and hard to summarize quantitatively. There may be value in narrowing down the scope of such reviews in the future, although this must be balanced against the paucity of papers on any given subject.

Criteria such as those suggested by the EPOC group are immensely valuable in lending rigour to the review process but should perhaps be modified to reflect the difficulties of isolating cause and effect in some of the settings we have described, where policy changes usually parallel other events and are dependent on broader contextual factors.[37] This raises the question of whether the standards that we applied are reasonable in the setting of health-systems research, where understanding the reasons for success or failure of social interventions is as critical and informative as measuring their effects. Observational or qualitative case studies,[38] studies of policy implementation[39] and costing studies play an important role in helping understand how policies get implemented. It is also important to stress the value of many studies that were not included in this review because they were not designed to offer a direct measure of effect, such as studies on health-seeking behaviour[7,40,41] or benefit-incidence analyses.[42] Recently, several developments have emerged that translate the principles of systematic reviews into health-system research, while assessing qualitative and quantitative evidence[43] or accounting for the complexity of interventions.[44] In the user-fee case, such complexity is demonstrated by the desirability of studying utilization, equity, quality and implementation simultaneously to really understand effect.

Conclusion

At present, the magnitude and heat of the debate over user fees are not matched by efforts to strengthen the evidence base on the topic. Despite a sizeable literature published on this issue and some vigorous debate spanning several decades, there is still a scarcity of good quality

Table 10. **Effects of increasing user fees on health service utilization in low- and middle-income countries, according to literature review**

Study	Outcome measure	Percent variation in fee	Reanalysis for the systematic review					Conclusions presented in the original study
			Percent change in intervention area(s)	"Absolute" elasticity	Percent change in control area(s)	Percent change in intervention areas	"Relative" elasticity	
Issifou & Kremsner (2004)[34]	Number of outpatient visits	+66	−47.4***	−0.7	−13.3	−34.1	−0.5	Drop in use in both cases
		+20[a]	−44.5***	−2.2	+26.9	−71.4	−3.6	
Bratt et al. (2002)[30]	Average number of visits to obstetrician-gynaecologist	+35.6	−22.5	−0.63[b]	−16.7	−5.8	−0.32[c]	Decrease in use but inelastic demand (for all cases)
		+53.5	−25.9	−0.48[b]	16.7	−9.3	−0.26[c]	
	Average number of prenatal visits	+36.9	−5.0	−0.14[b]	−3.0	−2.0	−0.10[c]	
		+54.6	−13.4	−0.25[b]	−3.0	−10.4	−0.28[c]	

Significance levels (computed for the review when possible): *** $P < 0.001$.

[a] The second increase of 20% took place after the first increase of 66%.

[b] Unlike Bratt et al.[30] who computed arc elasticities using the "mid-point technique", arc elasticities were recomputed using the following formula: $(Q_F - Q_I) / Q_I / (P_F - P_I) / P_I$, to use a coherent method throughout the review.

[c] Control areas experienced changes in price as well, even though they were less important: +17.4% for visits to obstetrician-gynaecologist, +17% for prenatal visits, +18.5% for intrauterine device (IUD) insertions and +17.5% for IUD revisits.

evidence. Two questions remain. Why is this the case? What can be done?

Good impact evaluations seem difficult to apply to health systems.[45] This is partly for economic reasons (they are costly and labour intensive) and partly for ethical and political ones (it is difficult to give services to some communities and not to others in order to create control groups). Such research may be overly burdensome and time consuming, while changes in policies are often driven by political agendas and happen quickly. Finally, very little large-scale research funding has been available in the area of health financing or health systems research.

Evidence from carefully designed impact evaluations should be advocated, and the recent effort of the Centre for Global Development to establish an International Initiative for Impact Evaluation is to be welcomed.[11] In the meantime, several simple steps can be taken by researchers to improve the quality of research and evidence in this area:

- lobby for policy-makers and donors to design prospective evaluations before rolling out national policy changes, such as introducing or removing user fees;
- try to identify control sites;
- use appropriate statistical and econometric methods to analyse data;
- combine quantitative analysis of effect with qualitative information describing context and implementation issues;
- seek to measure the equity effect of changes in charging policy. ■

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Résumé

Impact de la participation dont s'acquittent les utilisateurs des services de santé dans les pays à revenu faible ou moyen : Les données sont-elles solides?

Objectif Evaluer les effets de la participation à la charge de l'utilisateur sur le recours aux services de santé dans les pays à revenu faible ou moyen.

Méthodes Une revue systématique de 25 bases de données relatives aux sciences sociales, à l'économie et à la santé, ainsi que d'autres sources, a été effectuée pour identifier et évaluer les études concernant les effets de l'introduction, de la suppression, de l'augmentation ou de la réduction des frais à la charge des utilisateurs sur le recours aux divers services de santé, dans les pays à revenu faible ou moyen. Seules les études de type expérimental ou quasi-expérimental ont été prises en compte : il s'agissait notamment d'essais contrôlés randomisés par grappes, d'études contrôlées «avant et après» et d'analyses de séries temporelles interrompues. On a également évalué des articles mesurant les effets de ce type d'intervention sur l'évolution du recours aux services sanitaires (y compris les résultats en termes d'équité), des dépenses des ménages ou des résultats sanitaires.

Résultats Seize études ont été prises en compte : cinq études contrôlées avant et après, deux essais contrôlés et randomisés par grappes et neuf analyses de séries temporelles interrompues. On n'a retenu que des études rapportant des effets sur le recours aux services de santé, dans certains cas parmi des groupes socioéconomiques. On a constaté que la suppression ou la réduction des frais à la charge des utilisateurs se traduisait par un plus grand recours aux services curatifs et potentiellement

aux services préventifs, mais aussi parfois par une détérioration de la qualité des services. Le fait d'introduire ou d'augmenter de tels frais diminuait le recours à certains services curatifs, bien que des améliorations de la qualité de ces services aient pu contribuer à maintenir leur niveau d'utilisation dans certains cas. Lors de l'introduction ou de la suppression d'une participation à la charge des utilisateurs, l'impact a été immédiat et brusque. Les études ne montraient pas suffisamment bien si l'augmentation ou la diminution du recours observée perdurait à long terme. De plus, la plupart d'entre elles ont été jugées de basse qualité selon des critères adaptés d'après le Cochrane Collaboration's Effective Practice and Organisation of Care Group.

Conclusion Des travaux de recherche de meilleure qualité sont nécessaires pour examiner les effets de modifications des frais à la charge des bénéficiaires des services de santé dans les pays à revenu faible ou moyen.

Resumen

Impacto del cobro de honorarios a los usuarios en el uso de los servicios de salud en los países de ingresos bajos y medios: grado de evidencia

Objetivo Evaluar los efectos de los honorarios cobrados a los usuarios sobre el uso de los servicios de salud en los países de ingresos bajos y medios.

Métodos Se llevó a cabo una búsqueda sistemática en 25 bases de datos y otras fuentes de bibliografía sobre ciencias sociales, economía y salud a fin de identificar y evaluar los estudios realizados sobre los efectos de introducir, suprimir, aumentar o reducir las tarifas cobradas a los usuarios en la utilización de diversos servicios de salud en los países de ingresos bajos y medios. Sólo se tuvieron en cuenta los estudios experimentales o cuasiexperimentales: ensayos controlados aleatorizados por conglomerados (ECA-G), estudios controlados "antes y después"(CAD) y estudios de series temporales interrumpidas (STI). Se evaluaron los artículos en los que se habían medido los efectos de la intervención en la utilización de los servicios (incluidos los resultados de equidad), el gasto de los hogares o los resultados sanitarios.

Resultados Se consideraron 16 estudios: 5 CAD, 2 ECA-G y 9 STI. Sólo se identificaron los estudios en que se habían notificado efectos sobre la utilización de los servicios de salud, a veces en distintos grupos socioeconómicos. Se observó que la supresión o reducción de los honorarios cobrados a los usuarios aumentaba la utilización de los servicios curativos y podía aumentar también la de los servicios preventivos, pero esas medidas pueden tener un impacto negativo en la calidad de los servicios. La introducción de honorarios o el aumento de los mismos redujeron la utilización de algunos servicios curativos, aunque las mejoras de la calidad pueden haber ayudado a mantener la utilización en algunos casos. Los efectos de la introducción o supresión de los honorarios fueron inmediatos y pronunciados, pero los estudios no revelaron con claridad si ese aumento o reducción de la utilización se mantenía a largo plazo. Además, la mayoría de los estudios fueron clasificados como de baja calidad de acuerdo con los criterios adaptados a partir de los establecidos por el Grupo de Eficacia de la Práctica y Organización de la Atención de la Colaboración Cochrane.

Conclusión Es necesario emprender investigaciones de mayor calidad para determinar los efectos de los cambios en los honorarios pagados por los usuarios sobre los servicios de salud en los países de ingresos bajos y medios.

ملخص

أثر رسوم المستخدم على الانتفاع بالخدمات الصحية في البلدان المنخفضة والمتوسطة الدخل: ما مدى قوة البيِّنات؟

الهدف: تقييم أثر رسوم المستخدم على الانتفاع بالخدمات الصحية في البلدان المنخفضة والمتوسطة الدخل.

الطريقة: أجري بحث منهجي في 25 قاعدة بيانات للنشريات وغيرها من المصادر المتعلّقة بالعلوم الاجتماعية والاقتصادية والصحية، للتعرُّف على الدراسات التي أجريت حول إدخال، أو إزالة، أو زيادة، أو خفض رسوم المستخدم على الانتفاع بالخدمات الصحية المختلفة في البلدان المنخفضة والمتوسطة الدخل، وتقييم تلك الدراسات. ولم تدرج في البحث سوى الدراسات المصممة على شكل اختبارات أو لتكون شبيهة بالاختبارات، والتي تشمل: اختبارات عنقودية مُعَشَّاة مُضبَّطة بالشواهد، ودراسات مُضبَّطة لما قبل ولما بعد، ودراسات سلاسل زمنية متقطّعة. وأجري تقييم للأوراق المنشورة التي تم قياس تأثير التدخل فيها من حيث التغيرات التي طرأت على الانتفاع بالخدمات (والتي تشمل حصائل العدالة)، أو نفقات الأسرة أو الحصائل الصحية.

الموجودات: شمل البحث 16 دراسة، خمسة منها دراسات مضبَّطة لما قبل ولما بعد، واثنان منها دراسات عنقودية معشَّاة مُضَبَّطة بالشواهد وتسعة منها دراسات السلاسل الزمنية المتقطّعة. ولم يتم الأخذ إلا بالدراسات التي توضّح الأثر على الانتفاع بالخدمات الصحية، والتي أحياناً يتم تحديدها في ما بين الفئات الاجتماعية والاقتصادية. وقد وُجِد أن إزالة رسوم المستخدم أو تقليصها يزيد الانتفاع من الخدمات العلاجية، ومن المحتمل أنه أيضاً يزيد الانتفاع من الخدمات الوقائية، إلا أنه قد يؤثر تأثيراً سلبياً على جودة الخدمات. أما إدخال أو زيادة الرسوم فإنه ينقص الانتفاع ببعض الخدمات العلاجية، رغم أن تحسُّن الجودة قد يساعد في استمرار الانتفاع في بعض الحالات. وعند إدخال رسوم المستهلك أو إلغائها، يكون التأثير فورياً ومباغتاً. ولم تظهر الدراسة فيما إذا كان مثل هذه الزيادة أو هذا النقص في الانتفاع سيستمر لوقت طويل، وبالإضافة إلى ذلك، فقد أعطي لمعظم الدراسات درجات منخفضة في تقييم الجودة استناداً للمعايير المعتمدة من مجموعة كوكرين التعاونية للممارسات الفعالة وتنظيم الرعاية.

الاستنتاج: تمسُّ الحاجة للمزيد من البحوث العالية الجودة لدراسة تأثير التغييرات في رسوم المستخدم على الخدمات الصحية في البلدان المنخفضة والمتوسطة الدخل.

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Table 7. **Effects of abolishing user fees[a] on health service utilization in low- and middle-income countries, according to literature review**

Study	Outcome measure[b] (monthly averages)	Reanalysis for the systematic review						Conclusions presented in the original study
		Trend before change (β_1) at intervention sites	Trend before (β_1) at control sites	Immediate effect of intervention (β_2) at intervention sites	Immediate effect of intervention (β_2) at control sites	Trend after change (β_3) at intervention sites	Trend after change (β_3) at control sites	
Burnham et al. (2004)[25]	Use of curative services – new visits by patients <5 years	−107.31 (219.2)	NA	4 131.31* (1 240.78)	NA	−40.00 (105.31)	NA	Increased use of curative services, less important among young children; increased use of all preventive services (not tested)
	Use of curative services – new visits by all patients	749.83 (665.1)	NA	14 190.95* (3 777.56)	NA	136.23 (312.12)	NA	
	Use of preventive services – immunizations	−763.79 (408.53)	NA	3 975.45 (2 283.6)	NA	416.61** (201.45)	NA	
	Use of preventive services – antenatal care visits	−89.21 (103.33)	NA	966.43 (586.93)	NA	148.80*** (48.42)	NA	
	Use of preventive services – family planning visits	−30.22 (20.60)	NA	138.13 (166.60)	NA	56.60*** (9.89)	NA	
Nabyonga et al. (2005)[35]	Use of preventive services – 1st antenatal care visits	0.11 (0.84)	−0.05 (0.44)	−6.21 (8.55)	−4.43 (4.47)	0.86 (0.42)	0.21 (0.23)	No change in either outcome variable (not tested)
	Use of curative services – inpatient admissions	3.85 (2.28)	0.55 (4.15)	−42.24 (22.15)	−29.31 (41.72)	2.63** (1.20)	2.74 (2.13)	
Moses et al. (1992)[24]	Use of curative services – new visits by women, monthly average	37.07 (65.05)	NA	434.74 (353.37)	NA	40.88 (34.89)	NA	Sharp increase in visits, in particular for men (not tested)
	Use of curative services – new visits by men	−4.21 (32.67)	NA	510.56** (188.51)	NA	16.95 (16.86)	NA	

(Table 7, cont.)

Study	Outcome measure[b] (monthly averages)	Reanalysis for the systematic review						Conclusions presented in the original study
		Trend before change (β_1) at intervention sites[c]	Trend before (β_1) at control sites	Immediate effect of intervention (β_2) at intervention sites[c]	Immediate effect of intervention (β_2) at control sites	Trend after change (β_3) at intervention sites[c]	Trend after change (β_3) at control sites	
Collins et al. (1996)[22]	Use of curative services – general outpatient visits in district hospitals	61.2 (69.2)	NA	1 499.37* (399.3)	NA	41.5** (15.8)	NA	Sharp increase in use in both intervention sites
	Use of curative services – general outpatient visits in provincial hospitals	−2.31 (116.4)	NA	3 481.6*** (671.8)	NA	−109.3*** (26.6)	NA	
Wilkinson et al. (2001)[26]	Use of curative services – visits by adults	40.15 (19.69)	NA	399.13** (166.52)	NA	58.72** (20.12)	NA	Increase in curative services uptake; gradual fall in preventive service uptake in children and pregnant women
	Use of preventive services (immunization and growth monitoring) – visits by children <6 years	−63.73 (33.83)	NA	272.42 (277.06)	NA	−33.57 (34.99)	NA	
	Use of preventive services – antenatal care visits	−17.53 (12.98)	NA	298.56** (109.77)	NA	−24.62 (13.26)	NA	

*$P<0.05$; **$P<0.01$; ***$P<0.001$.

NA, not applicable (denotes the absence of control sites in the original study).

[a] Longitudinal data were reanalysed by the authors of the review, so that the results do not necessarily reflect the conclusions and views of the authors of the original paper. See method section for further details.

[b] The analysis corrected for auto-correlation in the data series.

[c] Values in parentheses are standard errors.

Table 8. **Effects of introducing (or increasing) user fees[a] on health service utilization in low- and middle-income countries, according to literature review**

Study	Outcome measure (monthly averages)	Reanalysis for the systematic review						Conclusions presented in the original study
		Trend before change (β_1) at intervention sites[b]	Trend before (β_1) at control sites[b]	Immediate effect of intervention (β_2) at intervention sites[b]	Immediate effect of intervention (β_2) at control sites[b]	Trend after change (β_3) at intervention sites[b]	Trend after change (β_3) at control sites[b]	
Ridde (2003)[20]	Use of curative services – new consultations[c]	−15.77 (20.80)	−11.84* (5.60)	−135.56 (447.29)	134.35 (126.02)	−6.60 (17.65)	6.17 (4.73)	Drop in use in intervention sites versus increase in control sites (no statistical test)
Mbugua et al. (1995)[21]	Use of curative services in hospitals and health centres (intervention)[c] and in dispensaries (controls) – new consultations	−269.48 (140.66)	−221.67* (867.15)	−2 916.4* (1 354.24)	2 157.1* (867.15)	266.42 (140.66)	189.40* (88.35)	Drop in use in intervention sites versus increase in control sites (no statistical test)
Collins et al. (1996)[22]	Use of curative services – general outpatient visits in district hospitals	−111.05 (36.44)**	NA	−2 225.8** (351.6)	NA	61.18 (49.35)	NA	Drop in use in both intervention sites
	Use of curative services – general outpatient visits in provincial hospitals	−3.78 (68.3)	NA	−5 920.7** (658.7)	NA	−2.30 (92.5)	NA	
Moses et al. (1992)[24]	Use of curative services – new visits by women[c]	−11.97 (7.58)	NA	−644.02*** (186.72)	NA	40.33 (29.36)	NA	Sharp decline in use, more striking for men than women
	Use of curative services – new visits by men[c]	−33.69*** (9.56)	NA	−1 221.7* (232.15)	NA	−15.68 (36.64)	NA	
Benjamin et al. (2001)[23]	Use of antenatal services – new enrolees	5.71*** (2.07)	−6.16*** (1.71)	−67.71 (43.36)	106.08*** (35.93)	−0.65 (2.35)	−2.79 (1.94)	Immediate drop in use, then increase
Bennett (1989)[33,d]	Use of curative services – outpatient visits by all age groups[c]	−2.68 (2.03)	−2.67 (1.47)	−167.10** (43.22)	−7.32 (29.90)	−0.37 (2.03)	−0.14 (1.47)	Significant drop in use in all facilities[e] (differences in means)

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

NA, not applicable (denotes the absence of control sites in the original study).

[a] Longitudinal data were reanalysed by the authors of the review, so that the results do not necessarily reflect the conclusions and views of the authors of the original paper.

[b] Values in parentheses are standard errors.

[c] The analysis corrected for auto-correlation in the data series.

[d] Unlike all other studies in the table, this one refers to an increase in user fees.

[e] For the reanalysis, only the results on the average utilization rates in 4 intervention facilities versus average utilization rate in the 2 control sites are presented. Reanalysis at the facility level showed a similar significant drop in utilization in 3 out of 4, while the small observed changes in the control sites were not significant.