

# Does charging different user fees for primary and secondary care affect first-contacts with primary healthcare? A systematic review

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## Abstract

Policy-makers are increasingly considering charging users different fees between primary and secondary care (differential user charges) to encourage utilisation of primary health care in health systems with limited gate keeping. A systematic review was conducted to evaluate the impact of introducing differential user charges on service utilisation. We reviewed studies published in MEDLINE, EMBASE, the Cochrane library, EconLIT, HMIC, and WHO library databases from January 1990 until June 2015. We extracted data from the studies meeting defined eligibility criteria and assessed study quality using an established checklist. We synthesized evidence narratively. Eight studies from six countries met our eligibility criteria. The overall study quality was low, with diversity in populations, interventions, settings, and methods. Five studies examined the introduction of or increase in user charges for secondary care, with four showing decreased secondary care utilisation, and three showing increased primary care utilisation. One study identified an increase in primary care utilisation after primary care user charges were reduced. The introduction of a non-referral charge in secondary care was associated with lower primary care utilisation in one study. One study compared user charges across insurance plans, associating higher charges in secondary care with higher utilisation in both primary and secondary care. Overall, the impact of introducing differential user-charges on primary care utilisation remains uncertain. Further research is required to understand their impact as a demand side intervention, including implications for health system costs and on utilisation among low-income patients.

**Keywords:** Primary healthcare, user fees, systematic review

## Key Messages

- Differential user charges between primary and secondary are increasingly being considered by policy-makers to encourage primary care use in health systems without gate keeping, but their effect is unknown.
- This systematic review suggests the expected changes in utilisation may be not realised and that the evidence base is weak.

## Introduction

Primary health care (PHC) has received renewed prominence by the World Health Organization (World Health Organization 2008) and as part of the United Nations resolution on Universal Health Coverage (UHC) (U.N. General Assembly 2012). Health systems with more developed PHC have better health outcomes, greater financial protection, and improved equity (Atun 2004, Starfield *et al.* 2005, Rasella *et al.* 2014, Macinko *et al.* 2009, 2010), attributable to increased comprehensiveness, continuity and coordination of care (Gupta and Bodenheimer 2013, Pourat *et al.* 2015, World Health Organization 2008, Macinko *et al.* 2009). However, whilst there has been much focus on strengthening PHC, many health systems remain hospital-centric with poorly developed and low quality PHC (Gillam 2008).

Options for re-orientating health systems towards PHC include gatekeeping – such as in the United Kingdom – where secondary healthcare (SHC) access is restricted without referral from PHC. This may be unfeasible or unacceptable in some settings – especially early on in PHC development when patients expect a choice of providers and direct access to specialists. Other interventions include shifting services from SHC to PHC – such as physically relocating services to the community, or transferring services to the PHC workforce. Without concomitant demand side interventions – such as reducing user fees for PHC or educating patients about the services available – these interventions may be insufficient to alter care-seeking behaviour and improve the use of PHC (Sibbald *et al.* 2007).

User charges are a powerful tool to alter the demand for healthcare. Research highlights their negative impact on healthcare utilisation, health outcomes, and out of pocket (OOP) expenditure, especially among low-income groups and the poor (Khun and Manderson 2008, Lagarde and Palmer 2008, Ridde and Morestin 2011, Lagarde and Palmer 2011, Brook *et al.* 2006, Cherner and Newhouse 2008). A number of countries have adopted cost sharing policies that introduced differential user charges to encourage first contact with PHC providers in settings without formal gatekeeping. Differential user charges are OOP expenditures that vary by the service provider type or tier – i.e. between generalist and specialist physicians, or between community and hospital settings for the same service. For example, in Belgium, where patients have free choice of providers, co-payment rates vary between PHC and SHC (Gerkens and Merkur 2010, Biro 2013). In Taiwan, where patients also have free choice of provider, ‘without referral’ co-payments have increased for SHC since 2005. Additionally, in Turkey, a non-referral co-payment exists for SHC aiming to encourage PHC use (Tatar *et al.* 2011). There remains, however, a lack of consensus about whether differential user charges have been successful in incentivising patients to choose PHC providers in the first instance.

We conducted a systematic review to evaluate the impact of differential user charges on PHC service utilisation. Included studies examined either an introduction or increase in a differential user charge between PHC and SHC, and evaluated changes in utilisation of or preference for services. Implied by the term differential user charge, is that a comparator – i.e. a service subjected to lesser or no user charges – is evaluated simultaneously. All retrospective and prospective study designs were included.

## Materials and methods

### Data sources

The systematic review protocol was registered with the Centre for Reviews and Dissemination at the University of York, UK

(<http://www.crd.york.ac.uk/PROSPERO/>) and included in the PROSPERO database (CRD42014014753). A broad search strategy was employed to maximise sensitivity. The strategy focused on two core domains – ‘provider choice or healthcare utilization’ and ‘cost-sharing’ using multiple synonyms. Search strategies are provided in Appendix 1. Searches were conducted between September 2014 and June 2015 for all studies published since January 1990. Six databases in medical and social science literature were searched – MEDLINE, EMBASE, Cochrane library, EconLit, the Health Management Information Consortium (HMIC) database and the WHO library Database (WHOLIS). These findings were supplemented by searching the internet (via Google and Google scholar) and grey literature databases with key terms for additional relevant material. References of articles that met eligibility criteria were also screened for additional studies.

### Eligibility criteria

Studies were considered eligible for inclusion if there was the introduction or removal of a differential user charge, which was evaluated quantitatively and over time (i.e. before and after). It was also necessary the study had a ‘control/comparator’ service (i.e. was not subjected to cost-sharing or at a lesser-rate) that is also evaluated temporally. Studies focusing on healthcare services with predominantly unplanned care, emergency care or specialist services (e.g. pregnancy) were excluded. All populations were considered eligible. Studies in any language, but with English translated titles and abstracts, were considered for inclusion.

### Screening and selection

Records were screened based on their title and any relevance to the research questions. The abstracts of selected records were independently reviewed by two authors followed by full article review. Disagreements over inclusion were resolved by two reviewers and where necessary a third.

### Data extraction

Data were extracted from each included study by one author and verified by a second. Study characteristics, methods employed, population characteristics, intervention information, statistical techniques, and reported outcomes and conclusions were recorded. Quantitative information regarding the impact of the intervention and statistical results were also recorded.

### Quality assessment

Quality was assessed using an adapted checklist from Downs and Black (1998) designed for randomised and non-randomised studies of health care interventions (Downs and Black 1998). We selected criteria relevant to non-randomised studies supplementing it with our own criteria (Appendix 2). Thirteen questions were used (six relating to reporting, four to internal validity, two to study design and outcome appropriateness, and one to external validity) with studies graded as low (scoring 0–4), intermediate (5–9) and high quality (10–13). Final overall quality grading was revised up or down depending on authors’ impressions of issues such as statistical tests and confounding.

### Analysis

Due to the large diversity in the institutional setting, study design, intervention type and outcomes measured, meta-analysis was not feasible. Descriptive analysis was performed.

## Results

### Study selection

35 292 records were obtained, 10 056 duplicates removed, and 25 236 records screened by title. Of these, 271 records were screened by abstract with 53 undergoing full text review. Of these, eight papers were selected for inclusion, with 45 rejected because of the lack of a comparator (most only assessed the changes in one service), 12 due to irrelevant (e.g. emergency care) or qualitative outcomes, 13 due to irrelevant intervention (i.e. there was no difference in the charge), and 5 due to study design limitations (Figure 1).

### Study characteristics

Of the eight included studies, two were from both Israel (Rosen *et al.* 2011, Vardy *et al.* 2006) and Taiwan (Chen *et al.* 2009, Huang and Tung 2006), and one from each of Egypt (Ward 2010), Eritrea (Asbu 1999), China (Powell-Jackson *et al.* 2015), and the USA (Joyce *et al.* 2000) (Table 1). Most studies (six) were published in 2006 or later, with one (USA) published in 2000 and another (Eritrea) in 1999. Six of the studies were from countries with predominantly insurance-funded health systems, be it public (Israel, Taiwan and China) (Chen *et al.* 2009, Huang and Tung 2006, Powell-Jackson *et al.* 2015, Rosen *et al.* 2011, Vardy *et al.* 2006), or private (USA) (Joyce *et al.* 2000). The two studies in Egypt (Ward 2010) and Eritrea (Asbu 1999) were in government run (i.e. not insurance-based) health systems.

### Intervention

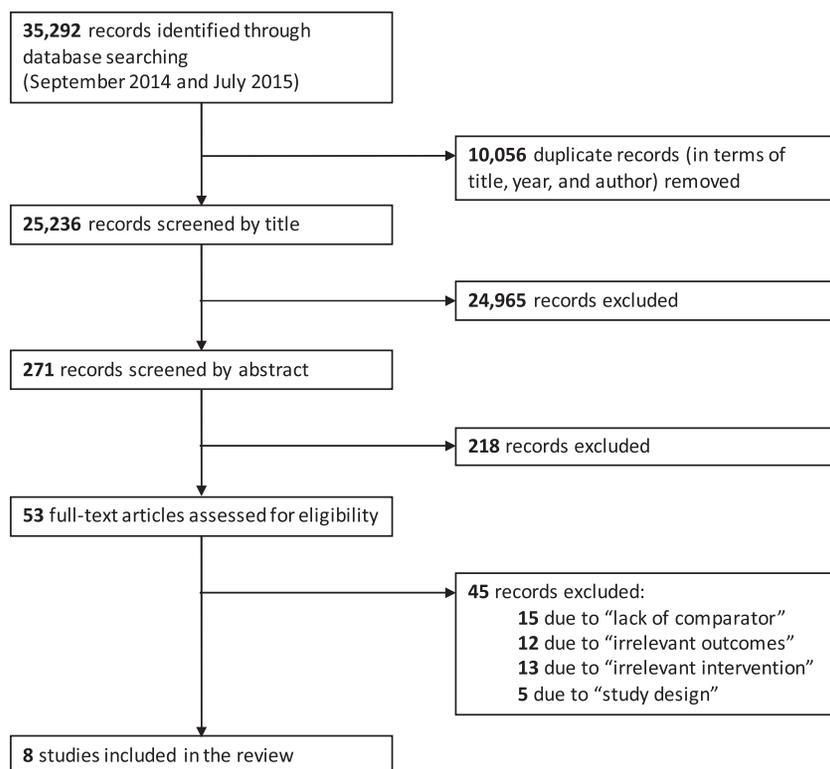
Six studies (Egypt, Eritrea, Taiwan, USA, and two from Israel) (Asbu 1999, Huang and Tung 2006, Joyce *et al.* 2000, Rosen *et al.* 2011,

Vardy *et al.* 2006, Ward 2010) evaluated the introduction (or in the USA, the continuation) of a higher charge for SHC relative to PHC. One study (Powell-Jackson *et al.* 2015) examined a reduction in charges for PHC in China. Two studies examined the impact of a non-referral fee for SHC either as part of an increase in user charges (Egypt) (Ward 2010) or as a separate intervention (Taiwan) (Chen *et al.* 2009).

There was considerable variability in the mechanisms through which differential user charges were introduced (including upfront and annual fees, exemptions, and fee gradient across providers), and the size of charges introduced. Study settings and study populations varied spanning community based samples, health service attendees, insurance plans, and the elderly (Table 1).

For all interventions (except the USA), there was the intention of shifting utilisation from SHC to PHC. Differential user charges were introduced exclusively as a demand-side intervention in all locations except China, where a supply-side reform (changes in provider incentives and payment) was introduced concurrently, but was introduced and evaluated separately.

All studies examined changes in utilisation as the main outcome, with three studies (Asbu 1999, Powell-Jackson *et al.* 2015, Vardy *et al.* 2006) assessing total consultations, two (Rosen *et al.* 2011) assessing average annual contacts, two (Chen *et al.* 2009, Ward 2010) assessing average monthly utilisation, and one (Huang and Tung 2006) assessing changes in provider preference. Additional outcomes examined included changes in medical costs in two studies (Taiwan) (Chen *et al.* 2009, Huang and Tung 2006), and preferred provider in one study (Egypt) (Ward 2010). Stratification was undertaken by demographic subgroups (China) (Powell-Jackson *et al.* 2015) and selected preventative services (Eritrea) (Asbu 1999).



**Figure 1** Selection of studies.

Exclusion criteria: 'lack of comparator' – studies did not measure changes in a similar service that was not subjected to cost-sharing or was at a lesser-rate; 'irrelevant outcomes' – services evaluated were inappropriate (i.e. emergency care); 'irrelevant intervention' – a differential user charge was not introduced; 'study design' – the study did not quantitatively examine the impact of a differential user charge (i.e. the study was hypothetical, was qualitative, or a discussion piece);

Table 1 Overview and quality of included studies

Study	Country	Study design (Methods)	Intervention Setting	Intervention	Study Population	Outcomes	Quality Score
Asbu 1999	Eritrea	<ul style="list-style-type: none"> <li>Time Series</li> <li>(Linear regression with dummy variables for before and after introduction of user charges)</li> </ul>	Whole country's health facilities	Fees were introduced of 3 Eritrea Birr (ETB) (US\$0.17) for visit to a health station, 5 ETB at health centres, 11 ETB at zone hospitals and 16 ETB at tertiary hospitals. For referred visits, the fees were lower at zone and tertiary hospitals (6 ETB and 7 ETB respectively). Increases (of 50%) in user charges were introduced for patients without a referral in higher tiers of medical services. Most patients (70% or more) pay the non-referral fee.	Attendees of the central referral hospital and local health centres in capital city ( <i>n</i> = ~400,000)	Total monthly consultations	Low
Chen et al. 2009	Taiwan	<ul style="list-style-type: none"> <li>Time Series</li> <li>(Interrupted time series)</li> </ul>	National health insurance (NHI) system	Medical centres/academic hospitals fees were increased from 150 TWD (Taiwanese dollar) (approx. US\$5) to 210 TWD and for regional hospitals from 100 to 140 TWD. Local/district hospitals and clinics maintained fees at 50 TWD. In addition to visits fees, a registration fee was charged by each tier, of 100–150 TWD in academic/medical centres, 30–100 TWD in regional hospitals, 0–100 in local hospitals and 0–50 TWD in physician clinics.	Population under Kao-Ping branch of Taiwan's NHI agency ( <i>n</i> = ~3.26 million)	Weekly medical visits and number of patients seen	Inter-mediate
Huang and Tung 2006	Taiwan	<ul style="list-style-type: none"> <li>Cross-Sectional</li> <li>(Comparison of distribution of utilisation (chi-squared test) and mean utilisation (t-test) by service tier before and after user charge increase)</li> </ul>	National health Insurance (NHI) system	Medical centres/academic hospitals fees were increased from 150 TWD (Taiwanese dollar) (approx. US\$5) to 210 TWD and for regional hospitals from 100 to 140 TWD. Local/district hospitals and clinics maintained fees at 50 TWD. In addition to visits fees, a registration fee was charged by each tier, of 100–150 TWD in academic/medical centres, 30–100 TWD in regional hospitals, 0–100 in local hospitals and 0–50 TWD in physician clinics.	Elderly population with chronic conditions from Taipei branch of Taiwan's NHI agency ( <i>n</i> = 329,617)	Individuals' choice of hospital type and mean number of visits	Inter-mediate
Joyce et al. 2000	USA	<ul style="list-style-type: none"> <li>Cross-sectional</li> <li>(Regression for utilisation rates and comparison of differences in utilisation rate by user charges tier)</li> </ul>	A Health Maintenance Organisation (HMO) in a upper midwestern metropolitan area (USA)	Members of a point-of-service HMO had a range of cost-sharing in place. Fees varied from \$0 to \$10 for primary care, and from \$10-\$20 or 20% of the cost for specialist care.	Enrollees of selected HMOs ( <i>n</i> = 16,192)	Annual visits to primary care practitioners and specialists.	Inter-mediate

(continued)

Table 1 (continued)

Study	Country	Study design (Methods)	Intervention Setting	Intervention	Study Population	Outcomes	Quality Score
Powell-Jackson <i>et al.</i> 2015	China	<ul style="list-style-type: none"> <li>• Quasi-experimental</li> <li>• (Difference-in-difference)</li> </ul>	2 countries, Ningxia Province	Deductible reimbursement rate increased from 0% to 65% for village clinics, from 30–35% to 50% for township health centres, and from 0% to 30% in county hospitals.	Household survey respondents ( $n = 8,583$ )	Individuals' use of healthcare facilities	High
Rosen <i>et al.</i> 2011	Israel	<ul style="list-style-type: none"> <li>• Cross-Sectional</li> <li>• (Difference-in-difference)</li> </ul>	National population covered by four insurance plans	User charges introduced for hospital-based (US\$4.5) and community based specialists (US\$2.5 – US\$4.5) which were previously free (except for one insurance plan). Primary care visits remained free except one insurance plan where the fees increased from US\$1 to US\$1.5.	Random sample of people of three insurance plans ( $n = 50,000$ )	Average annual visits	High
Vardy <i>et al.</i> 2006	Israel	<ul style="list-style-type: none"> <li>• Cross-Sectional</li> <li>• (Comparison of mean utilisation before and after (no statistical test))</li> </ul>	National population covered by four insurance plans	User charges introduced for hospital-based (US\$4.5) and community based specialists (US\$2.5 – US\$4.5) which were previously free (except for one insurance plan). Primary care visits remained free except one insurance plan where the fees increased from US\$1 to US\$1.5.	Attendees at Soroka medical centre outpatient clinics ( $n = 64,217$ ) and community clinics ( $n = 247,729$ )	Number of visits	Inter-mediate
Ward 2010	Egypt	<ul style="list-style-type: none"> <li>• Cross-Sectional</li> <li>• (Comparison of mean utilisation before and after (no statistical test))</li> </ul>	25 family medicine clinics (public) in Menouf district	Hospital user charges increased from 1 Egyptian pound (1E) (US \$0.17) to 10 LE (US \$1.70) with the full cost of drugs payable without a referral. For those with a referral from PHC, fees were a 10 LE (US \$1.70) annual fee and 2 LE (US \$0.34) per hospital visit with 50% cost of hospital drugs payable.	Population in Menouf ( $n \sim 39,100$ ) and Quwesna (control) ( $n \sim 294,000$ )	Average monthly visits	Low

### Study quality

Two studies were rated high quality (Powell-Jackson *et al.* 2015, Rosen *et al.* 2011), with both using a difference-in-difference methodology permitting causal inference (Table 1). Four studies (Chen *et al.* 2009, Huang and Tung 2006, Joyce *et al.* 2000, Vardy *et al.* 2006) were of intermediate quality, and three of low quality employing either inappropriate or no statistical tests. There was limited external validity (study population representativeness not stated) in six studies, and weak internal validity in general - four studies made no adjustment for potential confounding. Reporting quality was higher in general, although five studies inadequately reported or did not undertake statistical tests. There were concerns over the adequacy of outcomes (often total visits without denominator populations) in four studies, and only two studies had robust study designs.

### Impact of differential user charge interventions

Of the five studies that evaluated the introduction or increase of user charges in SHC (with lower charges in PHC), four found decreased SHC utilisation, with three studies showing increased PHC utilisation (Table 2). It was unclear whether associated decreases in SHC attendance led to an increase in attendance to PHC. Two intermediate quality studies (Israel and Taiwan) (Vardy *et al.* 2006, Huang and Tung 2006) showing lower SHC utilisation, found different effects in PHC, with one (Taiwan) (Huang and Tung 2006) associating differential user charges with increases in PHC utilisation, whilst the other (Israel) (Vardy *et al.* 2006) with the lower PHC utilisation. Two low quality studies (Egypt and Eritrea) (Ward 2010, Asbu 1999) also associated differential user charges with lower utilisation in SHC and higher utilisation in PHC, but both studies had methodological flaws (potential confounding and unknown population representativeness). In one high quality study (Israel) (Rosen *et al.* 2011), the introduction of higher user charges was associated with higher SHC utilisation in three insurance plans, whilst PHC utilisation increased for two insurance schemes, but decreased for one.

The USA study (of intermediate quality) which examined the impact of differential user charge arrangements across insurance schemes (Joyce *et al.* 2000), found that higher user charges in SHC were associated with higher utilisation in both SHC and PHC. However, increases in PHC utilisation were greater than SHC. There was no adjustment for differences in the characteristics of persons enrolled in the different insurance schemes.

One high quality study (China) (Powell-Jackson *et al.* 2015), where user charges for PHC were reduced, showed no significant impact on utilisation patterns in SHC subjected to higher fees. Utilisation in some SHC services increased, but they were not subjected to changes in user charges. Increased utilisation in PHC was associated with reductions in user charges.

One intermediate quality study from Taiwan (Chen *et al.* 2009), evaluating non-referral fee introduction, showed no change in utilisation in SHC, but lower utilisation in PHC services. Notably, the introduction of the non-referral fee coincided with a major clinical audit of physician records, which may have influenced these findings.

### Secondary findings

The study in Eritrea (Asbu 1999) reported increases in child immunisation, growth monitoring, family planning, and decreases in primary antenatal care after the introduction of differential user charges. One study (Egypt) (Ward 2010) examined patient preferences for health facilities confirming a shift in preferences from SHC to PHC, but also to private services. Both studies (Huang and Tung

2006, Chen *et al.* 2009) in Taiwan examined costs with one study (Huang and Tung 2006) reporting higher drug use days and total costs per person following differential user charge introduction, whilst the other study (Chen *et al.* 2009) reported lower outpatient costs. The study in China (Powell-Jackson *et al.* 2015) was the only study that examined potential equity impacts showing that PHC utilisation increased only in the lowest and middle wealth terciles.

### Discussion

Our findings suggest the impact of introducing differential user-charges on PHC utilisation remains uncertain. Whilst five of the eight studies suggest differential user charges may have increased utilisation in PHC, two of these were methodologically weak. With regard to SHC utilisation, four (including two low quality) studies found lower utilisation whilst two studies showed increased utilisation in services subjected to higher fees. There is little and very weak evidence that differential user charges can actually shift utilisation from SHC to PHC.

Literature indicates user-charges reduce utilisation, notably in LMICs (Lagarde and Palmer 2011, Ensor and Ronoh 2005, Rezatmand *et al.* 2013), whilst utilisation tends to increase following removal and exemption of user charges (Ridde and Morestin 2011, Ensor and Ronoh 2005) (especially for maternal (Dzakupasu *et al.* 2014, Hatt *et al.* 2013) and child health services (Bassani *et al.* 2013)). Unfortunately, the literature evaluated in this study was of insufficient quality to determine whether changes in cost altered utilisation patterns. Additionally, there are likely to be other mechanisms beyond cost affecting utilisation including perceived and actual service quality, health literacy, and advice from others (Victoor *et al.* 2012). Willingness-to-pay is likely to be influenced by socio-economics and demographics, and interactions between these, need for healthcare, and characteristics of the services available. These important factors were not considered in any of the studies evaluated, regrettably limiting the ability to identify which aspects beyond cost were influencing the changes reported. Introducing differential user charges per se may be insufficient to achieve behavioural change without further understanding of the factors underpinning provider choice in specific settings, and in the absence of other policies promoting first-contacts in PHC.

Despite the growing enthusiasm (Smullen and Hong 2015, WHO Regional Office for Europe's Health Evidence Network (HEN) 2004) among policy makers for differential user charges to encourage PHC utilisation, we found few high quality studies assessing effectiveness. The context of interventions varied including the quality and availability of services, the extent of pre-existing charges (including existing differentials in cost between PHC and SHC) and patient interactions and satisfaction with different health services. Secondly, the monetary amount of user charges varied both relative to individuals' ability to pay and between services. The generally small differential in user charges implemented between service tiers may explain the modest effects found. Thirdly, there were exemptions from cost-sharing (e.g. due to age or disability), but these were generally not evaluated.

The overall quality of the studies was generally low with methodological flaws, weak statistical tests, inadequate adjustment for confounding, and limited generalizability in terms of populations and services. Most studies did not explicitly test for differences in utilisation change between PHC and SHC. Few studies employed robust quasi-experimental designs which are recommended for evaluating health policy interventions (Petticrew 2009). Additionally,

Table 2 Findings and limitations of studies

Country	Author	Main Findings	Secondary Findings	Key Limitations
Egypt	Ward 2010	Average monthly outpatient visits declined 64.8% compared to the baseline period of April-July (9,430 versus 26,846 visits). In the control region, average visits increased 29.0% (from 3,074 to 3,968). For visits to family medicine clinics, average monthly visits increased 29.0% in the intervention region by 10.8% (from 24933 to 27625), but fell 29.0% in the control region (from 27,419 to 19,479). There was increased utilisation of health centres (1,295 extra consultations) and health stations (2,991 extra consultations) following introduction, with a drop in utilisation in the hospital (1,454 and 185 less consultations for outpatient and inpatient respectively) (all significant at $P < 0.05$ ). There was an increase of 47% in usage of village clinics ( $P < 0.05$ ). The effect on township health centre and county hospital usage was non-significant. There was reduced utilisation at province hospitals, but no significant impact on inpatient utilisation.	Of patients who would have sought care at hospital prior to treatment, only 35.5% would now use the hospital after intervention. 25.4% would use family medicine and 23.1% would use private.	Averages were compared with no control for time trends. There were multiple interventions at the same time.
Eritrea	Asbu 1999	Increases in child immunisation (of 46.2%), growth monitoring (24.5%), family planning (11.8%), and decreases in antenatal primary visits (7.1%) (No statistical test).	Households in the middle tercile wealth had the largest changes. The largest impact was on individuals living within 1km of village clinic, and on women and migrant workers.	Only small number of health centres used, few data points either side of intervention, and potential confounders not controlled for.
China	Powell-Jackson <i>et al.</i> 2015	Households in the middle tercile wealth had the largest changes. The largest impact was on individuals living within 1km of village clinic, and on women and migrant workers.	Chronic speciality areas had a higher decrease in total visits (8.5%) and compared to acute speciality (2.3%) in hospital outpatient clinics. In community-based specialists, only acute speciality areas decreased (7.3%).	Potential unobserved heterogeneity and confounders
Israel	Vardy <i>et al.</i> 2006	In hospital outpatient clinics, visits decreased 4.5% after introduction of user charges. New visits and walk-ins declined 6.2% and 10.1% respectively. In community-based specialist clinics (where the user charges were lower) visits decreased 6.8%. These results were in spite of an increase of 2.8% in the health plans members.	Chronic speciality areas had a higher decrease in total visits (8.5%) and compared to acute speciality (2.3%) in hospital outpatient clinics. In community-based specialists, only acute speciality areas decreased (7.3%).	Differences in types of patients and underlying trends not taken into account.
	Rosen <i>et al.</i> 2011	In one insurance plan, differential user charges increased utilisation 8% (for those paying user charges compared to exempt group) in common specialities with no significant effect on rare specialities. These results were similar in another insurance plan with an overall effect from user charges increasing total visits 13%, a 20% increase for common specialities and 6% for rare specialities. For the third health plan the effect was converse with a decline of 8% of total visits, a decline of 15% for common specialities and an increase of 3% for rare specialities.	Large differences between health insurance plans are likely. The control population (exempt) is likely to be different and individuals were not always sure of exemption status.	
Taiwan	Huang and Tung 2006	The percentage of individuals choosing academic hospitals declined (22.3% after compared to 23.4% prior), with small increases for regional (25.2% from 25.0%), district (14.6% from 14.5%), and clinics (37.9% from 37.1%) ( $P < 0.01$ ). Mean number of visits was lower (11.99 compared to 12.15 visits) after increase in user charges ( $P < 0.001$ ).	After introduction of user charges, drug use days were higher (17.14 compared to 17.06) ( $P < 0.01$ ) and total costs per person were higher (US\$39.55 compared to US\$35.57) ( $P < 0.01$ ).	Underlying trends not taken into account

(continued)

Table 2 (continued)

Country	Author	Main Findings	Secondary Findings	Key Limitations
	Chen et al. 2009	<ul style="list-style-type: none"> <li>Overall outpatient visits decreased 13.1% (<math>P=0.002</math>) and the total number of patients decreased 12.7% (<math>P=0.004</math>). The trends for medical centres (highest tier) were non-significant, but total visits and total number of outpatients were lower for regional hospitals (down 23.8% (<math>P=0.001</math>) and 25.0% respectively (<math>P&lt;0.001</math>)), local hospitals (down 13.7% (<math>P&lt;0.001</math>)) and 13.5% (<math>P&lt;0.001</math>)), and physician clinics (down 10.7% (<math>P=0.004</math>) and 9.3% (<math>P=0.004</math>)).</li> <li>Stratified analysis showed no significant impact in patients exempt from user charges, whilst those paying had changes similar to overall trends.</li> </ul>	Lower total outpatient costs were significantly associated with the introduction of a non-referral fee in regional and local/district hospitals.	An audit of primary care clinics was carried out at same time as the intervention where there was suspected duplication of patients.
USA	Joyce et al. 2000	Utilization was higher for both PHC and SHC (by 14.2% and 12.7%) when SHC user charges were higher by \$5, but utilisation was lower when PHC charges were lower (by 14.2% and 19.8%) by \$5.		Not the main aim of the study and no formal test between levels of user charges. Large differences in the number of individuals at each tier of cost-sharing and also no significance test carried out.

studies did not examine the types of utilisation and whether changes were clinically appropriate.

Further research is needed to determine effective interventions for shifting patient demand from SHC to PHC, especially in LMICs. Firstly, robust methodologies are needed for evaluation including quasi-experimental methods that are more appropriate to policy-analysis. Secondly, assessing the impact on quality of care, and clinical and health outcomes is needed. Thirdly, the effectiveness and efficiency of shifting utilisation to PHC need to be assessed, and whether these offset implementation costs of a differential user charge policy. Fourthly, equity remains an issue given the potential for regressive cost-sharing mechanisms not appropriately investigated. Lastly, the unintended consequences have not been evaluated, such as for-gone healthcare due to cost.

Strengthening PHC is key for UHC. Differential user charges are being considered in a growing number of settings aiming to promote and encourage PHC utilisation. Our findings show this objective. Other factors influencing PHC utilisation must be considered, including patients' existing preferences for services, and actual and perceived quality of services provided. Further high quality studies are required to determine the impact of differential user charges.

## Conclusion

Differential user charges have the potential to encourage greater utilisation of PHC in the absence of formal gatekeeping. However, findings from this systematic review demonstrate there is currently insufficient evidence that their introduction increases first contacts in PHC. Policy makers should exercise caution in implementing differential user charges and plan robust evaluation of impacts, including implications for health equity.

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