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Evidence to Policy: Do Voucher Programs Improve Maternal Health in Developing Countries?

By

Carinne Delia Brody

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Doctor in Public Health
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Committee in charge:

Professor Malcolm Potts, Chair
Professor Claire Brindis
Professor William Dow
Professor David Levine

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Abstract

Evidence to Policy: Do Voucher Programs Improve Maternal Health in Developing Countries?

By

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Maternal mortality has been one of the most daunting public health problems facing developing countries for several decades. The average lifetime risk of maternal death in least developed countries is 1 in 22 compared with 1 in 8000 in industrialized countries. Such vast regional differences demonstrate how available and accessible resources can completely change the picture. Even in low-resource settings, it has been shown that basic district health systems can deliver the services needed to save women's lives. But women face many barriers to accessing care including distance, transportation, cost, perceived poor quality or actual poor quality. One mechanism that researchers and policy makers have been experimenting with to address several of these barriers is a voucher. Within a health voucher program, a woman can purchase a voucher for a fraction of the cost of services or receive it for free and redeem it at an accredited health facilities (public or private) for specific services. Facilities are reimbursed for the care they deliver through government or development aid. Voucher programs aim to give patients the economic power to demand high-quality healthcare, to target aid to high-risk or low-income patients for critical services and to increase utilization rates within these populations.

Funders and policymakers have already shown support for this concept but more evidence is needed in order to evaluate if these programs should be taken to greater scale. This dissertation aims to address gaps in evidence and to work towards building stronger and more evidence-based policy around maternal health vouchers.

The first component of this dissertation is a systematic review of the literature on voucher programs for health goods and services in developing countries. The review aims to assess whether the evidence for voucher programs thus far has shown that they are achieving their objectives and examines contextual factors associated with program success. The second component is an evaluation of how a reproductive health voucher programs impacts the job satisfaction of management and frontline health care providers in Uganda. The third component is a qualitative assessment of the experiences of women who are eligible to receive a reproductive health voucher in Cambodia and assesses facilitative and inhibitive factors that affect voucher use.

As a result of this dissertation experience, next steps for improved policymaking around vouchers have been identified and include the need to focus efforts on evaluating if policy makers should use health voucher to support broader health system strengthening and how program implementers can use the experiences of beneficiaries (providers and patients) to tailor voucher programs to the local context while maintaining program fidelity.

This dissertation is dedicated to my best friend, life partner and greatest supporter – my husband.

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I. Introduction

Maternal mortality has been one of the most daunting public health problems facing developing countries for several decades. Twelve years ago, reducing maternal mortality was identified as one of the major global development priorities. In 2000, the United Nations set out to achieve eight global anti-poverty goals by the year 2015 called the Millennium Development Goals (MDGs). The goals range from commitments to girls education to infectious disease targets to environmental sustainability. In 2011, the fifth goal – *to reduce maternal mortality by 75 percent and to achieve universal access to reproductive health services* - has made the least progress of all.

Global efforts to reduce maternal mortality can be traced back to the Safe Motherhood Initiative which began in 1987 when three UN agencies— UNFPA, the World Bank, and WHO— sponsored the international Safe Motherhood Conference in Nairobi, Kenya. At the time, maternal mortality was not an international priority, but the conference facilitated the establishment of international networks of policymakers, advocates and experts that would prove to be important partnerships later on. By the time the next major milestone occurred – the International Conference on Population and Development in 1994 - every region of the world had held a safe motherhood conference and maternal health was considered by many a core component of reproductive health. Despite these efforts, few countries had seen a substantial reduction in the number of women who die giving life.

The story behind the Safe Motherhood Initiative is marked by fragmentation – from differing opinions on what intervention strategies work to divisions between natural allies in maternal, newborn and child health camps. Even the term “safe motherhood” was a contentious choice and one with which feminist groups in the late 80s were hesitant to align themselves because of who the term appeared to leave out. At the launch of the Safe Motherhood initiative, the proposed solution to reducing maternal mortality was expanding antenatal care and training traditional birth attendants (TBAs). Since the 1980s, the effectiveness of training TBAs on reducing maternal mortality came to be hotly debated. Little scientific evidence was available to support either the supporters or the critics. It wasn't until a 2002 meta-analysis that any review of the evidence was undertaken [1]. This review found that training TBAs could be a useful component of a safe motherhood program, but that the impacts were not large enough to overcome weak health care systems. In the end, TBA's effectiveness is only as strong as the health care facilities to which they can refer patients.

Soon after the launch of the Safe Motherhood Initiative, a seminal article published in the *Lancet* turned the focus of many advocates towards the development of emergency obstetric care (EmOC) systems [1]. Still others felt that the emphasis on EmOC ignored the value of community-level preventative activities such as grassroots family planning campaigns. In the early 1990s, skilled attendance at birth (by a trained provider either at home or at a facility) became a new mantra of the community, gaining support across many different groups. The shifting strategies affected the credibility of the campaign with global and local leaders and as a result, the initiative stalled.

In addition to the debate on which intervention should be scaled-up, there was an equally important effort to improve the measurement of maternal mortality in developing countries so

that the effectiveness of any intervention could be measured with more precision. It was in the 1980s that the methodology known as the Reproductive Age Mortality Survey (RAMOS) was developed and began to be used widely. The estimates produced by this and other early measurement methods helped to bring attention to the issues, to demonstrate the scope of the problem and to compel governments and donors to take action.

In 2006, it was another *Lancet* article on maternal survival that built consensus by suggesting a package of interventions: skilled attendance in addition to emergency obstetric care. To achieve this, many basic and referral health systems would have to be improved upon or created from scratch. While development leaders throughout the World Health Organization (WHO) and other UN agencies endorsed this strategy, there were problems with safe motherhood finding a home within the UN system. Between UNICEF (child survival), UNFPA (family planning) and the WHO (technical assistance), no one agency was prepared to take full ownership and there was no clear lead. In addition, within the climate of scarce resources, the different agencies and affiliated non-governmental organizations (NGOs) were protective of their small funding streams and didn't want to dilute the impact of their programs by trying to accomplish too much.

Other issues have contributed to the stagnation of the movement including the lack of access to rights by women in developing countries. In 1999, the White Ribbon Campaign, a rights-based organization advocating for maternal health, was an important contribution to the initiative, placing maternal health in the context of human rights – which was in accordance with the global health advocacy dialogue at that time. But perhaps because the women most at risk for maternal mortality – poor and disenfranchised women in developing countries – were never able to fully participate in the campaign, it did not find the necessary political support at local and national levels. It wasn't until the Women Deliver conferences held in 2007 and 2010, that advocates were successful in bringing all women's voices to the table. Local organizations, midwives association, women's groups and national representatives made up more than half of the attendees. In addition to a more inclusive attendee list, the field had been able to broaden their agenda to include approaches from a variety of disciplines and perspectives, which has also contributed to increased attendance from a variety of stakeholders.

These conferences along with the MDGs signified a level of momentum that has picked up since 2007 and continues today. In addition, organizations have increasingly been adopting community-based strategies, creating pathways for women's empowerment and connecting safe motherhood to family planning and child health, which complement the package of clinical interventions and which together have led to more effective, relevant and sustainable programs. One example of this combined approach is the efforts to expand community-based distribution of misoprostol – a drug that is used to prevent and treat post partum hemorrhage as well as to induce abortion – which brings together top-down policy with grassroots empowerment [2].

Today, we may be looking at a “policy window” - a favorable confluence of events providing an opportunity for advocates to press political leaders – that may allow advocates to garner the support of today's senior policy makers who have not been present at safe motherhood events in the past [3]. But the ongoing debates coupled with the need to constantly adapt to shifting trends and new policy climates will continue to challenge the initiative's success. Today's global health climate is characterized by an emphasis on evidence-based program design and policy-making. Researchers and advocates in the field of maternal health are focused on building the appropriate

evidence-base to inform best practices and cost-effective recommendations for policymakers and donors.

The 2011 *Saving Lives at Birth* grant competition sponsored by USAID, the Gates Foundation, the World Bank and others may be one of these signifying events. The aim of the grant competition was to accelerate progress towards reducing maternal and newborn deaths at the community level by, “harnessing the collective imagination and ingenuity of experts across a broad range of disciplines and expertise” [4]. Senior policy makers Dr. Rajiv Shah, the director of USAID, and Hilary Clinton, US Secretary of State, spoke at the awards ceremony. This effort to support the development of innovations in maternal health sponsored by major donors and policy-makers are essential to maintaining the momentum of the safe motherhood initiative and achieving MDG #5 by 2015 and may allow the policy community to form a more cohesive strategy towards interventions.

In the past, the Safe Motherhood Initiative confused policymakers with divergent ideas about solutions and health system interventions among global institutions that work on the issue. Now, the maternal health community must take advantage of the past decade of consensus-building efforts and the potential policy windows that may allow them to frame the safe motherhood message in a manner that is cohesive, evidence-based and inspiring to donors and policy makers.

The overarching aim of this dissertation is to generate policy-relevant evidence on a new intervention aimed at expanding access to maternal health services to the poorest, one of the barriers that has been recognized as playing a significant role in contributing to poor health outcomes. Maternal health voucher program have the potential to improve maternal health for those populations in developing countries that are most at risk of death. Towards this larger goal, there are three research questions that I will address in three papers as list below:

Paper #1: Systematic review of health vouchers

The first component of my dissertation is a systematic review of the literature on voucher programs for health goods and services in developing countries. The review aims to assess whether voucher programs thus far have been successful in achieving their objectives and examines contextual factors associated with program success. Five hypotheses are tested:

1. Voucher programs effectively target populations
2. Voucher programs increase utilization of health care goods and services.
3. Voucher programs allow for more efficient distribution of health goods and services compared to other forms of aid distribution.
4. Voucher programs improve the quality of health goods and services.
5. Voucher programs result in improved health outcomes of a population.

Paper #2: The impact of a voucher program on provider job satisfaction in Uganda

The second component of my dissertation an evaluation of a reproductive health voucher programs on the job satisfaction of both management and frontline health care providers in Uganda. This study examines the difference and associated factors of decreased job satisfaction among the two groups. The following hypothesis are tested:

1. Providers at voucher facilities see more patients than comparison providers.

2. Providers at voucher facilities have greater job satisfaction compared to providers at comparison facilities.
3. Job satisfaction is greater for managers than for frontline workers in both groups, but is more pronounced at voucher facilities.
4. Frontline workers at voucher facilities experience less job satisfaction as compared to comparison frontline providers when their salary doesn't increase.
5. Frontline workers at voucher facilities experience less job satisfaction as compared to comparison frontline providers when the number of staff doesn't increase.

Paper #3: Factors that impact voucher use by women in Cambodia

The third component of my dissertation is a qualitative assessment of the experiences of women who are eligible to receive a reproductive health voucher in Cambodia. The four main exploratory questions that will guide this study are:

1. What are the pre-program factors that facilitate voucher use?
2. What are the pre-program factors that inhibit voucher use?
3. What are the programmatic factors that facilitate voucher use?
4. What are the programmatic factors that inhibit voucher use?

Background

Maternal mortality is the largest contributor to the disease burden among women in developing countries [4]. While the exact number of deaths is practically impossible to measure, estimates have hovered around 500,000 women per year for the past twenty years. In 2010, and for the first time in decades, researchers concluded that there had been a drop in the number of deaths to approximately 350,000 [5, 6]. Despite this reduction, the disparity between rich and poor countries remains stark. The average lifetime risk of maternal death in least developed countries is 1 in 22 compared with 1 in 8000 in industrialized countries [7]. Such vast regional differences demonstrate how available and accessible resources can completely change the picture. Even in low-resource settings, it has been shown that basic district health systems can deliver the services needed to save women's lives [8].

In many developing countries, the quantity and quality of maternity care within public health systems is low and therefore low-income populations, who are at higher risk of maternal mortality, underutilize them [9, 10]. Women in these settings face many barriers to accessing care including distance, transportation, cost, perceived poor quality or actual poor quality [11]. Perceived or actual poor quality of services leads to low levels of utilization and that low utilization of services contributes to decreased investment in the quality of the services [12]. While these issues are not exclusive to public systems, they are exacerbated at public facilities where overworked and underpaid health workers struggle to provide services without adequate supplies. Patients who seek services at these facilities are often faced with long queues, unavailable medication or supplies and unmotivated or absent providers – and end up using public facilities only in dire emergencies.

In many countries, the quality of a public health system is influenced by the amount of funding from international donors. International aid is traditionally funneled through local ministries of health and into the public health system with the hopes of reaching the poor and underserved.

But this traditional structure of delivering aid lacks accountability and efficiency and does not have a strategy for dealing with corruption [13]. There is no way to ensure that donor money reaches the intended recipients and there exists little or no incentives for service providers to offer high quality service or any services beyond the bare essentials. As a result, the poorest segments of the population are left without access to publicly subsidized services [14]. Many critics feel that the aid money that has been poured into public health systems is not benefitting the intended populations.

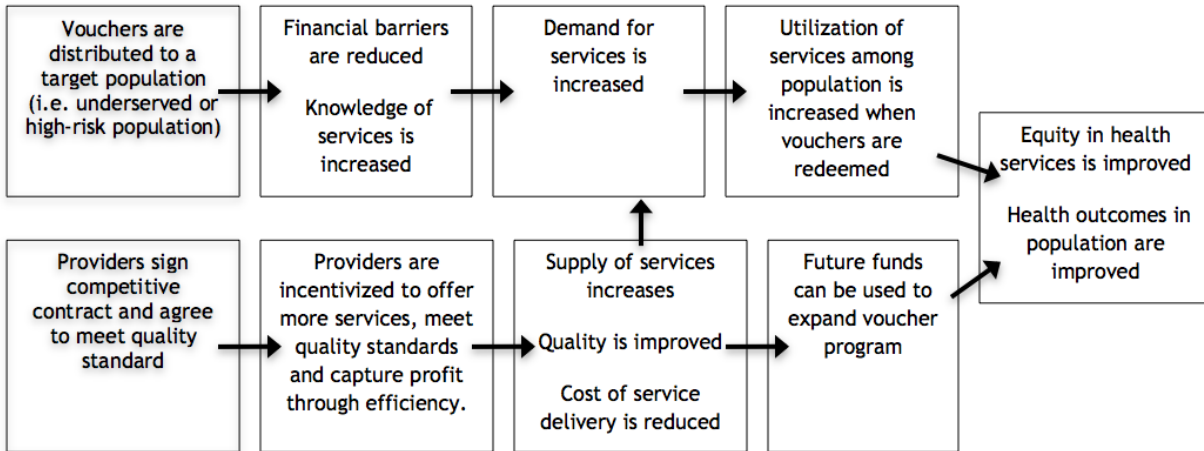
Today, many poor people rely on private providers, who are better able and perhaps more motivated to tailor services to client needs in order to attract consistent clientele. In addition, private providers are filling in the gaps in regions underserved by the public sector [15]. In some countries, the private sector provides over 50% of all healthcare services used in the country. Including the private sector in aid projects and forging partnerships between the public and private sectors are some ways to unlock the potential of the existing network of private care providers who have the motivation to deliver appropriate and high-quality services to their clientele. But any strategy must be careful not to promote private sector care at the expense of the public health system.

Novel models of healthcare financing and delivery are being implemented that attempt to both address the accountability concerns within development aid and capitalize on the opportunities for public-private partnerships in the health sector. One such approach is output-based aid, which directly aims to link aid to intended beneficiaries and desired outputs. This umbrella term is used to describe different types of subsidies that are given to providers or to patients, or both. While provider-led subsidies have advantages, they do not surmount issues of how to extend the reach of health services to all potential beneficiaries. In contrast, patient-led subsidies allow aid money to flow into specific populations for specific health services of known cost-effectiveness [15].

One patient-led model that researchers and policy makers have been experimenting with is a voucher system. Within a health voucher program, a woman can purchase a voucher for a fraction of the cost of services or receive it for free and redeem it at an accredited health facility (public or private). These facilities are reimbursed for the care they deliver through government or development aid. The voucher strategy aims to promote the delivery of high quality, patient-centered care and evoke maximum utilization of both public and/or private facilities by people living in poverty. Voucher programs aim to give patients the economic power to demand high-quality healthcare, to target aid to high-risk or low-income patients for critical services and to increase utilization rates within these populations.

The theoretical context for voucher programs can be found in the basic economic theories of supply and demand where voucher programs aim to inject market mechanisms into the delivery and utilization of health aid in order to improve efficiency and improve health [15]. The causal hypotheses are depicted in the figure below (Figure 1) and a narrative description follows.

Figure 1. Causal Hypothesis

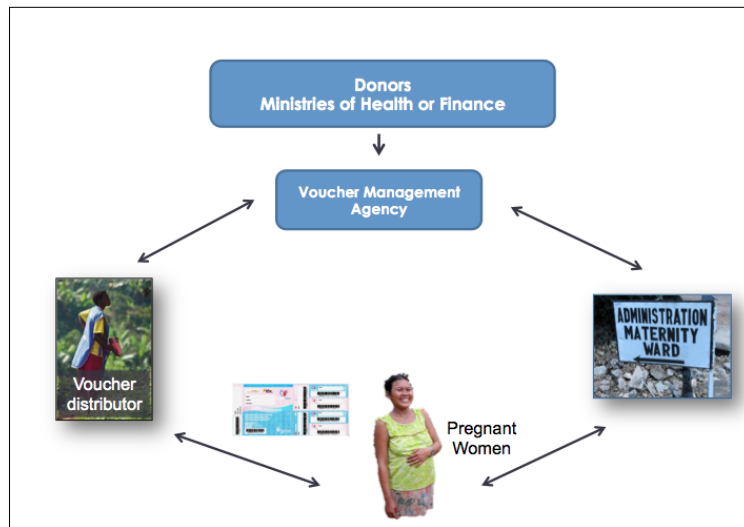


Description of Voucher Programs

Voucher programs can offer subsidized or free vouchers that are delivered to the community by a cadre of voucher distributors that are hired to distribute vouchers and counsel clients on the services being offered. Subsidized vouchers are usually sold in marketplaces, community centers and at shops usually in resource-poor or high-risk areas. Free vouchers are usually delivered to the households of the poor. Patients receive a voucher for a specific health good or service such as maternity care, STI treatment, or a bed net at a fraction of the cost along with information and counseling on the various services. Patients then redeem these vouchers at accredited facilities who have undergone a quality assessment and have signed a contract with a third party agency who manages the program. A quality assessment usually examines minimum opening hours, staffing levels, basic and specialized equipment, communication capabilities, registration with ministry of health, willingness to send sample of patient records to voucher agency, performance of staff on proficiency tests, average patient waiting times and patient satisfaction indices.

The third party voucher management agency (i.e. an NGO, faith-based or private company) processes claims from facilities for each voucher patient visit and delivers reimbursement funds provided by donors to either government ministries or directly to the third party agency. Within this framework, clinics compete for contracts on the basis of price, quality and location. In return for steady, reliable income, clinics are incentivized to maintain high quality services in order to satisfy the demand. This process provides accountability since the number of vouchers distributor and redeemed are tracked. These programs have been sponsored by local government bodies such as a ministry of health or finance, by a foreign donor or by a collaboration of the two. In sum, by targeting specific populations, increasing utilization, and enhancing quality and efficiency, it is expected that voucher programs will improve the health of the targeted populations as compared to the current public and private health care delivery models. The framework below depicts how voucher programs work (Figure 2).

Figure 2. Voucher Scheme from a reproductive health voucher program*



Support for health voucher programs is increasing. The World Bank recently created a multi-donor Health Results Innovation Trust Fund (HRITF), which supports demand-side financing approaches in the health sector for achievement of the health-related MDGs. The fund has over \$500 million to spend on supporting the design, implementation and evaluation of these new financing mechanisms through 2022 [16]. Many other bilateral development banks from donor countries such as Germany, Norway, and the United Kingdom are also contributing funds to piloting and evaluating voucher programs. Most voucher programs today are stand-alone program and not part of a combination of strategies although there are examples of voucher programs as part of larger health systems interventions.

The earliest voucher programs that exist in the literature were IUD and sterilization voucher programs in Korea [17] and Taiwan [18] in the mid-1960s. The evaluation of the Taiwan voucher program was a matched case-control study and found that fertility levels had decreased in the voucher group as compared to the control group. Another voucher program in Taiwan was evaluated in 1978 and findings indicated dramatic increases (a more than 7 fold increase) in utilization of long-acting family planning methods nation-wide [19]. The next evaluation of a voucher program does not exist in the literature until 2001 when an evaluation of an emergency contraception voucher program in Zambia was published [20]. Since 2001, health voucher programs have been used throughout the developing world including countries in Asia, Africa, and Latin America. Health vouchers have been used for basic health services, maternal and child health services, and sexual health services to include maternity care, insecticide treated bed nets, STI testing and treatment, HIV testing, family planning, cervical cancer screening, gender-based violence recovery services, post abortion care and safe abortion services.

From the evaluative data that is available on health voucher programs, it appears to be a promising strategy to spark an increase in the utilization of health services from poor or high-risk populations although we have no evidence that compares this strategy to other demand-creation interventions although voucher have been compared to conditional cash transfers schemes in the policy analysis literature, mostly in the context of emergency assistance [21, 22]. A recent systematic review [23] examined the use of vouchers for reproductive health services in developing countries. The authors identified thirteen evaluations that met their inclusion criteria, which assessed programs in Bangladesh, Cambodia, China, Kenya (2), Korea, India, Indonesia, Nicaragua (3), Taiwan and Uganda. They found that the included evaluations reported positive findings in the areas of utilization of reproductive health services, improved quality of care, and improved population health outcomes. There were much weaker findings on cost-effectiveness or population health impacts and they were unable to make any conclusions for these outcome categories. In addition, most studies utilized a cross-sectional or before-and-after design without controls and thus, are not considered particularly strong study designs.

While there have been a number of individual program evaluations, there are still many aspects of the voucher approach that have not been explored. Despite the fact that the recent evidence for voucher programs has not been particularly rigorous or ground-breaking, stakeholders and policy makers continue to implement these programs in part because of the economic theory around incentives rather than evaluation theory or evidence. While it is not unusual that funders show interest or support for a concept before evidence is fully in place – more evidence is needed in order to go to greater scale. Specifically, a more comprehensive understanding of how health voucher programs work will allow for a rigorous assessment of the potential of vouchers to strengthen health systems and improve health outcomes. My dissertation aims to address these gaps in evidence and to work towards building stronger and more evidence-based policy around maternal health vouchers.

Guiding Principles

My dissertation is driven by the theory of evidence-based policy (EBP) – a process of policy making that is informed by objective evidence. Under this framework, health interventions become useful scientific evidence when they have been rigorously evaluated and subjected to critical review such that the results of the program can be attributed to the intervention itself and not to other factors. Evidence that a program works is stronger when that program has been implemented in more than one setting and the outcomes have been proven, sustainable, cost-effective and of public importance. Programming that has been proven effective in this way can be endorsed by government agencies and used to create policy; the impacts of those policies, in turn, can be evaluated. Policy-making based on program evaluations and research is said to play an important role in improving policy-relevant outcomes [24].

Policy-making without a strong evidence base can be an ideologically driven process, sometimes based on information with severe biases or influenced by politicians' own values and experiences. There are also pressures from lobbyists and interest groups that can have a powerful impact on how policies are developed. In addition, pragmatism – decision-making within given resource and time constraints – can restrict the ability of policy makers to integrate new evidence into the policy development process [25]. Identifying the barriers to evidence-based policymaking has been a growing part of the discourse. Overcoming barriers means that

policymakers are able to create an environment that is conducive to rational policy analysis, which involves understanding the value of evidence, accessing and critically appraising research findings and increasing communication within and between the scientific community [26].

Evidence-based policymaking stems from the principles of evidence-based medicine which first came into prominence in the 1990s. Early advocates of evidence-based medicine (EBM) felt that medical decision-making relied too heavily on “intuition, unsystematic clinical experience, and pathophysiologic rationale” [27]. EBM was introduced as an attempt to encourage more rigorous medical decisions and to reduce the wide variations within clinical practice [27]. The principles of EBM rest on a hierarchy of evidence that is used to rank medical studies based on the level of rigor of the study design. This ranking system gives priority to randomized controlled trials (RCTs) although it recognizes that in some situations RCTs may not be ethically or logistically possible [28]. While the EBM movement continues to gain popularity, its more than twenty years history has been marked by polarized debates over potential biases and the overemphasis on RCTs [29]. Despite these debates, EBM continues to be the most widely accepted process for evaluating evidence to inform clinical guidelines and the field has also responded to criticisms by developing approaches that can synthesis evidence from a wider array of study designs.

Over the past ten years, there has been a diffusion of EBP principles in non-clinical settings such as public policy, education and international development [30]. All different types of practitioners have been using the conceptual foundations of EBP to inform research design and evidence synthesis with the goal of increasing the odds that interventions will work as intended and that the public good will be enhanced. Other stakeholders have expressed support for these approaches: donors feel more confident in the programs they fund, community members feel more secure that they are getting high quality programs and program managers believe that limited resources are being used more efficiently [30].

In international development policy, the “evidence-based revolution” is well underway. The rise in evidence-based development policy may be fueled by the reports claiming that past policy-making strategies have been inefficient and lack accountability [13, 31]. These reports claimed that despite the billions of dollars spent on development projects, there was very little known about the actual impact of aid projects. Today, major donors such as the World Bank are calling for more rigorous ways to assess the appropriateness and effectiveness of global health programs [29]. Practitioners have responded by using randomization and other experimental methodologies that allow for rigorous evaluations and are using the results to provide critical input on the more appropriate design of future programs [32]. In response, impact evaluations of individual programs are becoming more and more common. An impact evaluation assesses changes in the well being of individuals, households or communities that can be attributed to a particular project, program or policy [33]. Most impact evaluations involve some type of counterfactual analysis – a baseline measure, a comparison group or a control group. Usually, the central impact evaluation question is: what would have happened to those receiving the intervention if they had not in fact received the program.

In the past, there has been reluctance to carry out such impact evaluations because they were seen to be expensive, time-consuming, technically complex and potentially politically sensitive [34]. But more and more practitioners and policy makers are seeing that the relatively small

investment of an impact evaluation, compared to overall project cost, can be a powerful tool used to improve program outcomes and is particularly relevant in developing countries where resources are scarce and all efforts should be made to maximize a program's impact on poverty reduction. In addition, evaluations that tease out how programs work, and not just if they work, have become important contributions to the literature. Understanding the mechanisms of action between an intervention and an outcome can aid in improving programs, transferring results to other settings and isolating the various "active ingredients" that lead to the ultimate impact.

In the field of global maternal health, creating evidence-based policy is both a growing priority and a unique challenge. Researchers and policy-makers in maternal health are engaging more and more with the idea of EBP but acknowledge that specific barriers exist such as the technical challenges of measuring maternal mortality, which can be attributed to incomplete vital registries, the lack of generalizability from smaller facility-based studies, and the expense of large-scale population level surveys necessary to accurately measure maternal deaths [35]. In addition, some leaders in the field believe that waiting for the results of randomized trials or large-scale population studies when observational studies and clinical experience offer a robust evidence base for making policy decision can cost hundreds of lives, especially in poor countries with great need and potential to benefit. In their words, "if the science is good, we should act before the trials are done" [36].

The current momentum of the safe motherhood initiative has brought renewed attention and innovation to the field of maternal health. As new interventions such as maternal health vouchers are developed and tested, there is more emphasis placed on the need for rigorous evaluation that can produce the kind of compelling findings that will convince policymakers existing in today's evidence-based climate to allocate more funds towards reducing maternal mortality. There is a need for larger impact evaluations but also for smaller mechanisms of action studies that can give program managers the information they need to maximize program effectiveness. This dissertation will examine the evidence to-date, identify gaps, and note implications for future research, policy, and programmatic strategies, as well as conduct small-scale 'mechanisms of action' evaluations of two maternal health voucher programs.

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II: The Impact of Vouchers on the Use and Quality of Health Care in Developing Countries: A Systematic Review

Background

Developing countries bear 93% of the world's disease burden and account for only 11% of the world's health spending [1]. As a result of this gap between burden of disease and funding, the health sector in developing countries has been an important recipient of international aid. Over the last three decades, the world has seen an increased focus on global health partly due to the identification of health as a key determinant of economic growth and poverty reduction [2, 3]. As a result, official development assistance from bilateral and multilateral agencies towards health has increased by 17% annually between 2000 and 2007 [4].

In addition to allocating increased funds to address health inequalities, donors have emphasized the need for efficient and transparent spending of aid funds [5]. A variety of strategies exist for distributing health aid. One strategy that is growing in popularity is the use of voucher programs [6-9], where vouchers are distributed to a targeted population for free or subsidized health goods/services. The theoretical context for voucher programs can be found in the basic economic theories of supply and demand where voucher programs aim to inject market mechanisms into the delivery of health aid in order to improve quality, reduce cost, and improve health [10].

One advantage of voucher programs is the potential to grant purchasing power to a specific group of people, often low-income or high-risk individuals, who might otherwise be ignored in the market due to their lack of funds or knowledge of good and services [11]. By removing financial and knowledge barriers, including reducing some of the stigma surrounding specific services such as STI testing and family planning, to a targeted population, utilization of the specific health goods and/or services is expected to increase. Additionally, most voucher programs also aim to improve the supply of goods and services available by reimbursing providers based on the volume of goods and services delivered.

Another important aspect of most voucher programs is the process of contracting with providers who meet minimum standards for quality, of providing some form of provider training and of competition between providers with the expectations that voucher programs can increase quality for voucher goods/services [12]. Providers have incentives to meet the obligations of their contract at low cost to capture more of the payment established in the voucher reimbursement. As such, voucher programs are also hypothesized to improve the cost efficiency of health goods and services. In addition, vouchers allow for rapid evaluation with the tracking of how many vouchers are distributed and redeemed.

By targeting specific populations, increasing utilization, and enhancing quality and efficiency, it is hypothesized that voucher programs can improve the health of populations. The literature lacks a systematic assessment of whether vouchers for health goods and services yield value for donors in the form of effective spending of aid compared to input-based spending programs such as payment for the construction of health facilities or providers salaries.

As such, the overall objective of this systematic review is to assess whether voucher programs thus far have been successful in achieving their objectives and should therefore be considered as

a mechanism for further health aid. Based on the theory presented above, the five hypotheses tested in this review are:

1. Voucher programs effectively target specific populations.
2. Voucher programs increase utilization of specified health care goods/services.
3. Voucher programs allow for more efficient and acceptable distribution of health goods/services compared to other forms of aid distribution.
4. Voucher programs improve the quality of health goods/services.
5. Voucher programs result in improved health of the targeted population.

Methods

This systematic review sought studies on voucher programs that provided health goods and/or services to populations in developing countries. The search for studies was conducted in two phases. In the first phase, the bibliographic databases PubMed, POPLINE, ScienceDirect, Wiley Inter-Science, Cochrane Library, Web of Science, WHOLIS and Google Scholar were searched using specified keywords as were publishers' pages of key journals. Key search terms used in database search were as follows:

Voucher terms:

*voucher**

*coupon**

*output-based**

“output based”

“result based”

“results based”

results-based - “performance based”*

*performance-based**

pay-for-performance

"pay for performance"

“demand side”

demand-side

Geographical terms:

*developing countr**

"poor countr"*

"low-income countr"*

"low-resource countr"*

Health terms:

*health**

NOTE: (*') is used in search engines to look for the root word prior to the asterisk with any ending. For example, searching for "countr*" searches for the word "country" and "countries".

The “grey literature” was also examined by hand-searching key organizational and network websites such as The Population Council’s Reproductive Health Voucher website (RHVouchers.org), the World Bank Group’s Results-based Financing website (rbfhealth.org) and The Global Partnership on Output-Based Aid website (gpoba.org). In the second phase of

the search, three additional activities took place. First, the reference lists of all the reviewed full-text studies were examined to identify additional, secondary resources. Next, a supplemental keyword search in PubMed and google.com was conducted, where search terms were generated from the names of voucher programs identified in round one, such as a specific program name and location. Finally, key contacts were consulted for further suggestions of publications for consideration.

Eight different criteria were used to determine whether a study was included or excluded from the review:

1. Health voucher programs – included studies were limited to those regarding health voucher programs that provided health goods/services. Examples of relevant health goods/services are: skilled provider care; hospital and clinic services; health insurance; pharmaceuticals; family planning products; ITNs for the prevention of malaria; and vaccinations. Publications and studies not related to voucher programs or concerning voucher programs delivering food, clean water, and non-health education were not included in this review, even though they may have a health impact.
2. Language – included studies were limited to those with an abstract published in English. Non-English publications with an English abstract were reviewed for relevance and an appropriate translation was sought when necessary.
3. Population – included studies were limited to those located in developing countries at the time the voucher program was operating. The Human Development Index (HDI) was used to determine development, and voucher programs located in a country assessed as “very high human development” by HDI were excluded from the analysis.
4. Time frame – included studies were limited to those published from 1960 to 2010. The 1960 cut-off date was chosen because the background literature indicates that the earliest health voucher programs for which there are evaluation data (reproductive health care in Taiwan and Korea) occurred during the 1960s. No programs prior to the 1960s were identified and no studies indicated that earlier voucher programs existed.
5. Type of study – included studies were limited to those that evaluated some aspect of a health voucher program and contained some quantitative evidence. General descriptions and opinion pieces on voucher programs were not included in the analysis. Additionally, summaries that discussed evaluation findings but did not provide a methodology section were excluded unless they specifically cited a description of the methods in a separate publication.
6. Study designs – included studies evaluating voucher programs required an observable contrast such as differences in measurement between two points in time (e.g. before and after program implementation); control group (e.g. non-voucher control areas, or non-voucher patients); control program (e.g. supply-side program delivering the same health goods/services in the same location); or comparison with accepted benchmarks of success (e.g. national screening program statistics). Studies reporting implementation statistics such as increase in the number of services delivered were excluded unless they measured proportions that could be tested for statistically significant levels of change. Relevant study designs included: RCTs, non-randomized trials (time series), case-control, cohort, pre-post with and without controls.
7. Voucher characteristics – included studies were limited to voucher programs that operate where health aid is distributed to a population of potential users (either for free or at

subsidized price) through a physical voucher or a voucher-like targeting mechanism, such as a “poverty card”, and vouchers are used for provider reimbursement. Studies were included if the use of vouchers played a substantial role in the intervention or if evaluation outcomes were specific to the role of vouchers. Evaluation studies of a broader intervention where the use of vouchers was a minor component of the intervention were excluded.

8. Study outcomes –included studies examined at least one variable that fit into one of the five categories of interest: targeting; utilization; quality; efficiency; and health impact. Studies without any relevant outcomes were excluded, however; no such studies were identified.

The authors realize that program specifics such as length of programs, funders, the inclusion of public or private health facilities are important factors in understanding why certain programs succeed and why other do not. A sub-analysis was conducted that examined findings by region, type of health good, and several program characteristics including whether the voucher was free or subsidized and whether providers were public, private or both.

Two researchers screened abstracts based on the inclusion criteria; a third reviewer arbitrated discrepancies. Full studies were obtained and comprehensively reviewed based on the inclusion criteria. Data on location of voucher program, time period of voucher program, type of health voucher program, funders, targeted population, targeting mechanism, private or public providers, program management agency, and program scale were extracted. In synthesizing the data, a narrative synthesis approach was taken [13], where qualitative conclusions were made with regards to the five hypotheses.

Due to the heterogeneous nature of outcomes and study designs examined in this review, it was important to assess the quality of included studies and the confidence in the study findings in order to assess the risk of bias in synthesizing the literature. The original intent for assessing quality and risk of bias was to rely on the guidelines recommended by the Cochrane Collaboration for assessing study quality using the CONSORT checklist [14] for Randomized Control Trials (RCTs), cluster RCTs, controlled before and after, and interrupted time series and the Newcastle-Ottawa Scale [15] for case-control and cohort studies.

However, we found very few studies that could be adequately assessed using these tools and therefore adapted these tools and others identified in the literature to better serve the purposes of this review. The primary foundation for the Confidence in Findings Assessment was the Newcastle-Ottawa scale [15]. The adapted tool utilized for this review, the “Confidence in Findings Assessment” (CFA) checklist is found in Appendix 1.

The assessment tool was named the “Confidence in Findings Assessment” instead of a quality assessment tool because the purpose of the tool was not just to judge the quality of the research performed, but rather to assist in gauging one’s confidence that the findings presented accurately assess the results of the voucher program. For example, cross-sectional studies based on non-random samples may be executed well (e.g. little missing data, control for important confounding variables, thoroughly described methodology) and be deemed a fairly high-quality execution. However, there is only so much confidence one can place in a cross-sectional study of a non-random sample of the population and therefore the findings are less likely to be regarded with “high confidence”. As such, questions regarding overall study design, magnitude of effect, and statistical significance were added to the CFA.

After going through the four categories on the CFA (study design, selection of participants, quality of comparison, measurement), a set of “final consideration” questions were used to summarize a reviewer’s assessment of the study. The reviewer selected an “overall judgement” in one of the following categories:

- I have some MAJOR concerns about the methods used or the lack of information available on this study and therefore seriously question the findings. (low confidence)
- I have some MINOR concerns about the methods used or the lack of information available on this study and therefore would consider the findings with some caution. (medium confidence)
- I do not have concerns about the methods used or information provided on this study and consider the findings with confidence. (high confidence)

Two reviewers independently assessed their level of confidence in the study findings.

Next, each study was reviewed for relevant outcomes that fell within one of the five hypotheses. Outcomes addressing one of the hypotheses were selected for analysis if they fit the following criteria:

1. The outcome was designed by the study authors to assess voucher program performance.
2. The outcome variable reflected a comparison that could be measured through statistical significance tests or against established benchmarks or competing programs within the same country. If statistical significance was not given but the information was available to compute a test of significance, the outcome was imputed.
3. The outcome variable was related to the evaluation of a voucher program.
4. The outcome variable addressed the overall sample in the study or a specific sub-group of interest.

For each outcome variable used for synthesis, information was recorded on the overall direction of effect as either: *no effect of statistical significance, positive effect indicating good voucher program performance, or negative effect of poor voucher performance.*

A synthesis system was developed using four primary measures: the total number of outcome variables examined in the study, the total number of voucher programs evaluated in the study, the direction of effect of the outcome variables and the CFA scores. Based on the aggregated outcome variables for each outcome category, we concluded that the evidence supported one of five pre-established conclusion categories:

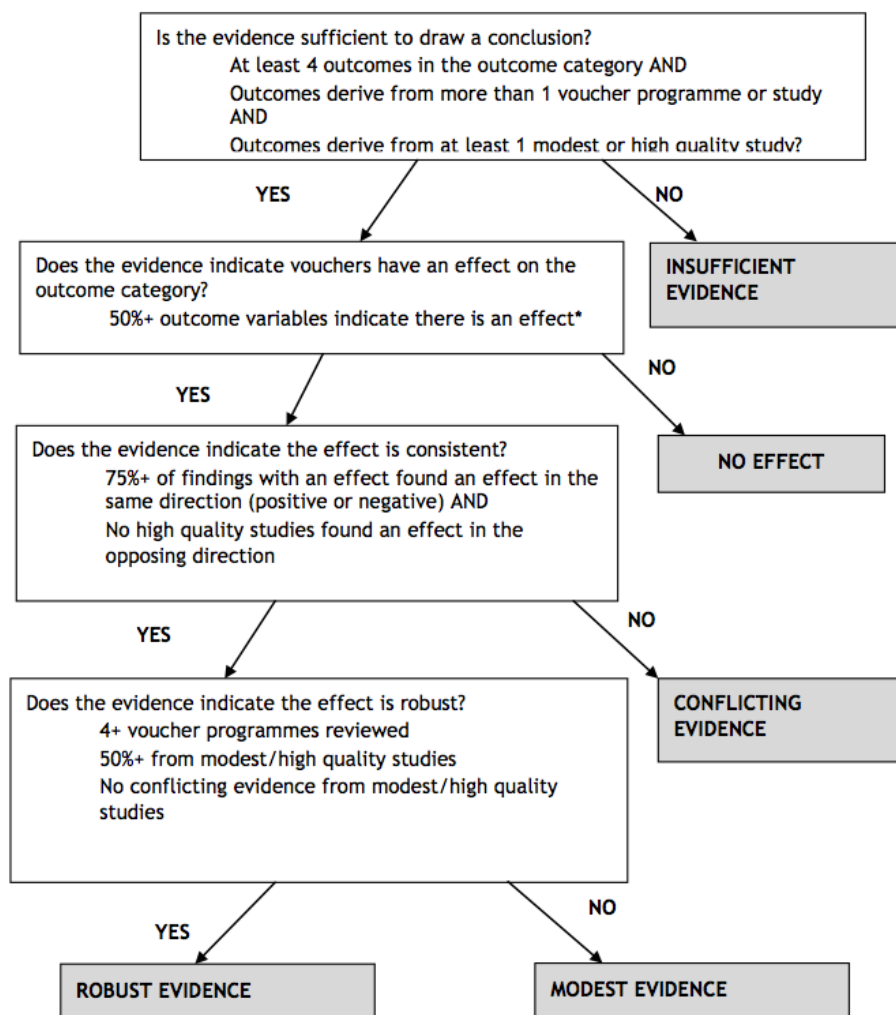
1. Insufficient evidence - indicating that there was not enough evidence available to determine the relationship between voucher programs and the outcome category. A conclusion of insufficient evidence was made if there were fewer than four variables in a particular outcome category, if all outcomes only derived from one voucher program (e.g.

Nicaragua cervical cancer program), or if all outcomes derived from studies with a low CFA.

2. No effect – indicating that the evidence suggested that vouchers did not have a statistically significant effect on the outcome category. A conclusion of no effect was made if more than 50% of outcomes within a category indicated there was no statistically significant effect. A pre-established exception to this rule was when all of the “no evidence of an effect” conclusions come from low CFA studies and at least 25% of the outcomes from medium/high CFA studies found a significant effect.
3. Conflicting evidence – indicating that vouchers have had both positive and negative effects on the outcome category and may signal a need for sub-analysis to indicate under what conditions voucher programs have positive or negative findings. A conclusion of “conflicting evidence” was drawn if two different high CFA studies or sets of medium/low CFA studies (25% or greater) had findings in opposing directions.
4. Modest evidence – indicating that there was modest evidence that voucher programs had an impact on the outcome category. A conclusion of “modest evidence” was made if there was evidence indicating a positive or negative relationship; however, the evidence was not strong enough to be called robust. The outcomes may have derived from fewer than four voucher programs or the confidence in the study findings may not have been adequate to qualify for robust evidence.
5. Robust evidence – indicating that there was clear and convincing evidence that voucher programs had a significant positive or negative impact on the outcome category. A conclusion of “robust evidence” was drawn if four or more voucher programs were reviewed, 50% of the findings (in the same direction) derived from medium or high CFA studies, and no conflicting evidence from medium/high CFA studies was found.

A decision tree that depicts how the conclusion categorization occurred for the overall outcome categories and sub-group analyses was used to make the categorization (Figure 2). Calculations of percentages relevant to the synthesis were conducted in Microsoft Excel.

Figure 1. Decision tree and criteria for assessing whether evidence justifies level and strength of outcome



In addition to examining the overall outcome categories, the outcomes were analysed according to sub-groups of interest, including:

- The type of voucher health goods/services – all of the voucher goods were for ITNs and almost all of the voucher services were for reproductive health (maternity services, family planning, etc.).
- Location of the voucher program – voucher programs were classified as being located in Africa, Asia, or Latin America.
- Characteristics of the voucher program – voucher programs were examined on whether they provided free health goods/services or a subsidy for health goods/services and whether voucher programs used public, private or a mix of public/private providers.

In order to assess the stability of the conclusions, a sensitivity analysis was performed. A sensitivity analysis measures the impact on the results of an adjustment of one or more characteristics of the studies. The strength of inference is greater if the results are unchanged

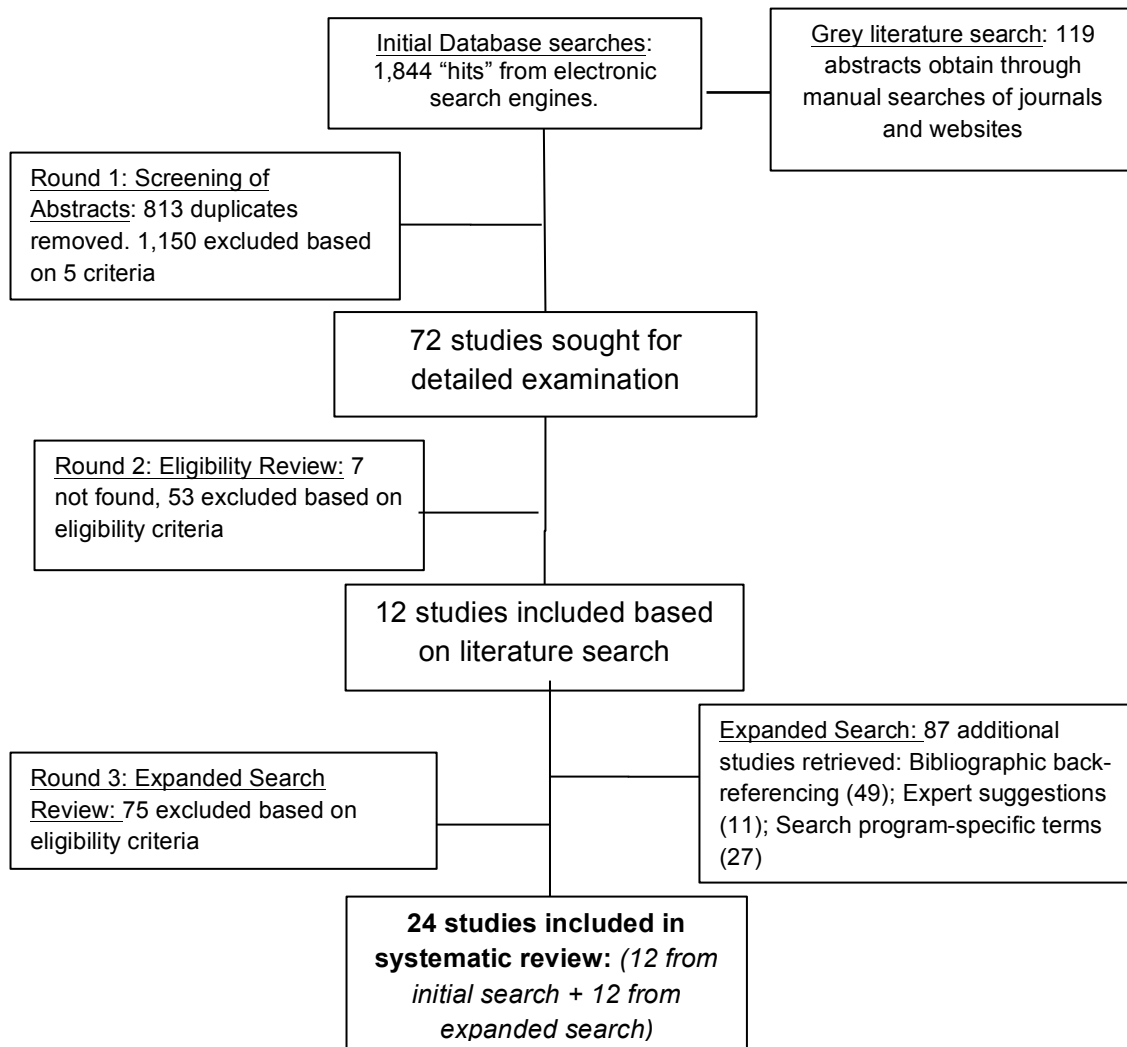
under varying conditions. For each outcome category with sufficient evidence to assess stability, the conclusions were examined under three hypothetical situations: (1) if one additional outcome variable of “no evidence of an effect” was added, (2) if one additional outcome variable of “positive effect” was added, and (3) if the median outcome was deleted. The hypothetical “additional outcome” variable added to assess stability was assigned a CFA of “medium confidence” and did not represent an additional study or voucher program. Any conclusions that changed under these situations were deemed as unstable results, to be considered with caution. Due to the heterogeneity of outcome variables and study designs, however, it was determined that a meta-analysis would not be possible for this report.

Results

The search was conducted from September to November 2010. A total of 24 studies were included in the analysis for the purposes of synthesising the data. Figure 2 details the flow diagram of the filtering process used to identify the included studies. Initially 1,031 abstracts were reviewed from electronic database searches and an additional 119 studies or abstracts were reviewed from the grey literature search. Of these 1,150 total, 1,078 were eliminated based on the first five criteria in round one. Of the 72 selected for full text review, 65 (90%) were obtained while seven studies could not be located. Some of the sources that could not be found were government documents that were over 20 years old, such as reports on voucher programs in Iran and Korea. Two researchers independently applied the review criteria and came to the same conclusion for 95% of the studies. A third team member decided on the inclusion/exclusion for three studies.

In round two, based on the full-text of the 65 studies, 53 were eliminated when applying all of the criteria listed above and 12 studies were included. The expanded search processes yielded an additional 87 studies for review, 49 identified through the reference lists of studies reviewed in round two, 27 identified through supplemental searches, and 11 identified through expert contacts. Of the 87 studies from the expanded search studies, 75 were excluded and 12 were included based on the eight criteria list above with 98% agreement between the two reviewers. In total, 24 studies were included in the review.

Figure 2. Diagram of Literature Search Process



Nine voucher programs addressed some aspect of reproductive health (e.g., maternity services, family planning, and treatment for sexually transmitted infections) and six programs distributed insecticide-treated bed net distribution programs. One general health services program was also evaluated. Of the 16 studies, eight evaluated voucher programs were located in Africa, five were in Asia, and three were in Latin America (all about one program in Nicaragua).

The majority of evaluations included in this review are observational and had either a pre/post design, a cross-sectional intervention/comparison design or a combination of the two. One case control study and two economic modelling studies were included as well as one clinical record review. One before-during-after evaluation using a simulated patient (or “secret shopper”) was included as well. The table below describes each study design:

Table 1: Included evaluation studies and their study design

Voucher Program First Author, Year (Study Time Period)	Study Design	Study Comparison
Bangladesh Maternity <i>Hatt, 2010</i> (2005-2009)	HH surveys of rural poor pregnant women in districts with the longest duration of the program and women in matched control districts	Women in matched control districts
Bangladesh Maternity <i>Rahman, 2009</i> (2007-2008)	Pre/post intervention survey of service providers, field workers and poor pregnant women	Pre-program data providers, field workers and pregnant women
Bangladesh Maternity <i>Schmidt, 2008</i> (March 2008)	Data extraction on caesarean sections from district health facilities	Data from non-voucher district health facilities
Cambodia Maternity <i>Ir, 2010</i> (2006-2008)	Extraction of delivery rates and outcomes from routine health information systems at total hospitals; expected births estimated from DHS data	Nearby rural districts without the voucher scheme
India Maternity <i>Bhat, 2009</i> (March 2007)	Cross-sectional survey on demographic information of randomly selected rural pregnant women	Rural pregnant women who were not beneficiaries of the voucher scheme
India Maternity Nandan, 2010 (2008-2009)	In-depth interviews with women delivering at MAMTA Friendly Hospitals in five districts	Women delivering at non-MAMTA Friendly Hospitals
Mozambique ITNs <i>De Oliveira, 2010</i> (Feb. 2006)	Cross-sectional survey on net ownership of HHs in rural districts	Information recalled from before the intervention
Nicaragua Cervical Cancer Screening <i>Howe, 2005</i> (2003-2005)	Clinical records review of Pap screenings and pathology reports for >25 and < 25 yr olds	Expected values from international and US data sources
Nicaragua STIs <i>Borghi, 2005</i> (1999-2000)	Cost-effectiveness analysis using data for 1 year of a voucher program	Costs in the absence of the program using baseline data, reports and literature
Nicaragua STIs McKay, 2006 (1995-2005)	Medical record extraction on timing of treatments and prevalence of STIs	Change over time through time series analysis
Nicaragua Reproductive Health <i>Meuwissen, 2006a</i> (2000-2002)	Female simulated patient visits before, during and after intervention	Simulated patient scores from before the intervention

Nicaragua Reproductive Health <i>Meuwissen, 2006b</i> (2000-2002)	Pre/post intervention interviews with providers at SRH clinics	Providers' responses from before the intervention
Nicaragua Reproductive Health <i>Meuwissen, 2006c</i> (2000-2002)	Cross-sectional survey of female adolescents' knowledge and use of contraceptives	Female adolescents who did not receive a voucher
Nicaragua Reproductive Health <i>Meuwissen, 2006d</i> (2002-2004)	Self-administered questionnaires to a random sample of adolescent girls	Adolescent female respondents who did not use the voucher
Niger ITNs <i>Thwing, 2008</i> (Jan. –Sept. 2006)	National-wide cross sectional survey of HH before and after the campaign	Data from survey conducted prior to campaign
Senegal ITNs <i>Netmark, 2009</i> (Nov. 2008 – Jan. 2009)	Cross-sectional survey of urban and rural HHs in 2008	Data from 2000 and 2004 surveys
Taiwan IUD <i>Chang, 1969</i> (1968)	Case-control study using government HH registries to identify characteristics of IUD acceptors and non-acceptors	Individual "matched" controls based on similar demographic characteristics at time of first insertion
Tanzania ITNs <i>Hanson, 2009</i> (2005-2007)	Cross-sectional HH and facilities surveys early, midway and at the end of the program	Data from early and midway surveys
Tanzania ITNs <i>Khatib, 2008</i> (June –Aug. 2006)	Cross-sectional survey on ITN use in randomly selected HH in rural districts	Different distribution arms (vaccination campaign, commercial market, etc.)
Tanzania ITNs <i>Kikumbih, 2005</i> (1999)	Survey of randomly selected HHs on net use and a costing exercise using secondary data	HHs in districts without voucher program
Tanzania ITNs <i>Marchant, 2008</i> (July-Sept. 2008)	Cross sectional surveys on ITN ownership and use of HH in 2008	Data from the 2005-2007 surveys
Uganda STIs <i>Bellows, 2009</i> (2006-2007)	HH survey of STI prevalence, knowledge and treatment utilisation before and after the intervention	Data from before the intervention
Zambia ITNs <i>Grabowsky, 2008</i> (Feb. 2006)	Cross-sectional survey on ITN use in HH with children >5 yrs in rural districts 6-months post-campaign	Responses recalled from before the campaign
Zambia Health Services <i>Kondo, 2007</i> (1998-2000)	Economic models of characteristics that may predict choice of payment for health services	User charges or prepayment

HH=household; DHS=Demographic and Health Surveys; SRH=Sexual and Reproductive Health; IUD=Intrauterine Device

The consensus rate between the two reviewers using the CFA was 95%. For the one study where the reviewers disagreed on the confidence score, a third reviewer decided on the final score.

A majority of the studies, approximately 70%, were assessed as “medium confidence in the findings”. A score of “medium confidence” means that there were some minor concerns about the study design, methods or the lack of information presented in the study, but overall the findings were believable with regards to the impact of the voucher program on the outcome variables.

Five studies were assessed as “low confidence”, meaning that the reviewers had some major concerns about the study findings. The remaining two studies were given a score of “high confidence”, meaning the reviewers were confident that the findings reflected the impact of the voucher program.

A total of 64 outcome variables were extracted from 24 studies and synthesized as follows.

For *targeting*, evidence from four programs, six studies, and nine total outcome variables were synthesized and the authors concluded that there was modest evidence indicating that voucher programs were able to effectively target specific populations for health goods/ services.

Table 2: Targeting outcome variables included in the synthesis of Health Voucher Programs

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
<i>India maternal health care</i>				
Nandan et al. 2010	In-depth interviews with beneficiary and non-beneficiary women delivering at facilities	low	% of women with a “below poverty line” card using maternity services (n=312)	Positive (16.7% vs. 32.4%, p=0.004)
<i>Nicaragua cervical cancer screening</i>				
Howe et al. 2005	Clinical records review of Pap screenings and pathology reports	medium	% of high-risk women screened compared to standard benchmarks (n=1448)	Positive (3.7% compared to 1-5% ACCP; 0.2-1.5% NBCCEDP; 0.45% Bethesda)
<i>Tanzania Insecticide Treated Nets (ITNs)</i>				

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
Hanson et al. 2009	Cross sectional HH and facilities surveys early, midway and at the end of the program	high	<p>Increase in % of ITNs purchased with a voucher - infant under one since start of program (n=1115)</p> <p>Increase in % of ITNs purchased with a voucher - children under five since start of program (n=3410)</p> <p>Increase in % of ITNs purchased with a voucher - pregnant women since start of program (n=752)</p>	<p>Positive (7% to 50%, p<0.001)</p> <p>Positive (3.5% to 33.5%, p<0.001)</p> <p>Positive (6.3% to 23.6%, p<0.001)</p>
Khatib et al. 2008	Cross-sectional community survey of ITN utilization comparing various bed net programs	medium	% of ITNs obtained through a voucher – infants (n=422)	Positive (highest proportion of infant use is through voucher, SS)
Marchant et al. 2008	Cross sectional surveys on ITN ownership and use of HH	medium	<p>SES level of pregnant women receiving and redeeming vouchers (n=1203)</p> <p>SES level of infants receiving and redeeming vouchers (n=1203)</p>	<p>Negative (least poor at 60% to most poor at 39%, p=0.01)</p> <p>No effect (least poor at 23% to most poor at 35%, p=0.5)</p>
<i>Zambia ITNs</i>				

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
Grabowsky et al. 2007	Cross-sectional survey on ITN ownership and use with retrospective component	medium	Equity ratio between high and low quintiles pre-intervention vs. post intervention (n=369)	Positive (change from SS difference to NSS difference)

SS = statistically significant at $p < 0.05$; NSS = not statistically significant at $p < 0.05$

SES=Socio-economic status; BPL=Below the Poverty Line

There was only one *efficiency* outcome variable that examined whether a voucher program was able to deliver health goods/services at lower cost than regular service provision. While the finding from this study was positive, there is insufficient evidence to make a conclusion on this outcome category.

Table 3. Efficiency outcome variables included in the synthesis

Study Citation	Study Design	CFA Grade	Outcome Variable (sample size)	Direction of Effect (Statistics)
<i>Nicaragua STI care for high-risk groups</i>				
Borghi et al. 2005	Cost-analysis using cost data from one year of a voucher program and costs in the absence of the program using baseline data, reports and literature estimates	medium	Costs per STI case cured (n=1543 patients)	Positive (estimated cost of \$118 STI effectively cured vs. \$200 in the absence of the program)

Almost half of the total outcome variables were classified as *utilization* outcomes. The evidence from 13 programs, 16 studies, and 30 outcome variables found robust evidence that voucher programs were able to increase utilization of health goods and services.

Table 4. Utilization outcome variables included in synthesis

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
<i>Bangladesh maternity</i>				
Hatt et al. 2010	Pre/post intervention HH surveys of rural poor pregnant women in districts with the longest duration of the program and women in matched control districts ¹	high	% of deliveries attended by skilled providers (n=2,028) % facility-based deliveries (n=2,028) % any ANC (n=2,028)	Positive (p<0.001) Positive (p<0.001) Positive (p<0.001)
Rahman et al. 2009	Pre/post intervention survey of service providers, field workers and poor pregnant women ²	medium	% women using 1+ ANC visit (n=850) % women with trained provider at delivery (n=850) % facility-based delivery (n=850)	Positive (79% to 89%, SS) Positive (5.5% to 21.6%, SS) Positive (2.3% to 18.3%, SS)
<i>Cambodia maternity</i>				

¹ Due to the limit of three variables per study per outcome category, an outcome % in PNC was not used in synthesis. The finding for this variable was a positive effect at p=0.004

² Due to the limit of three variables per study per outcome category, a series of outcome variables showing the increase in proportion of women experiencing a complication who consulted with a trained provider were not included. Additionally, an outcome on the percent of women using post-natal care was not used for the synthesis. All of the omitted variables had the same overall finding of a statistically significant positive effect.

Ir et al. 2010	Actual versus expected facility-based births using administrative information and census data	low	% facility-based deliveries (n=5611 deliveries)	Positive (estimated 16% to 45%, SS not given) ³
<i>India maternity (Gujarat)</i>				
Bhat et al. 2009	Cross-sectional survey on demographic information of randomly selected rural pregnant women	low	% delivery conducted by private OB/GYN (n=656) % utilization of PNC (n=656)	No effect (39% vs. 32%, NSS) No effect (28% vs. 31%, NSS)
<i>India maternity (MAMTA)</i>				
Nandan et al. 2010	In-depth interviews with beneficiary and non-beneficiary women delivering at facility	low	% of women using ultrasound services	Positive (83.3% vs. 97.6%, p<0.001)
<i>Mozambique ITNs</i>				
De Oliveira 2010 et al.	Cross-sectional survey on net ownership of HHs in rural districts	medium	% household ownership of net - entire sample (n=947)	Positive (21% pre to 55% post, p=0.0012)
<i>Nicaragua cervical cancer screening</i>				
Howe et al. 2005	Clinical records review of Pap screenings and pathology reports	medium	% of women who received diagnostic work-ups and treatment compared to standard benchmarks (n=1,448)	Positive (94% compared to ACCP>90%; 86% NBCCEDP)
<i>Nicaragua reproductive health (adolescents)</i>				

³ Although SS was not given, the increase appeared dramatic enough that a conclusion of positive effect was given.

Meuwissen et al. 2006(c)	Cross-sectional community-based survey comparing voucher receivers to non-receivers	medium	% use of reproductive health (n=5114) % use of modern FP methods (n=853) % use of condoms in last sex act (n=835)	Positive (34% vs.19%, SS) No effect (50% vs. 50%, NSS) No Effect (23% vs. 20%, NSS)
<i>Niger bed nets</i>				
Thwing 2008	National-wide cross sectional survey of HH before and after the campaign	medium	% household own any net (n=4251) % household own ITN (n=4251)	Positive (67% to 87%, p<.05) Positive (6% to 65%, p<.05)
<i>Senegal bed nets</i>				
NetMark 2009	Cross sectional surveys of urban and rural HHs	medium	% nets used among those who own - voucher vs. free and purchase without voucher (n=2,998)	Positive (77% use with voucher compared to 61% and 53%, p <0.001)
<i>Tanzania bed nets</i>				

Hanson et al. 2009	Cross sectional HH and facilities surveys early, midway and at the end of the program ⁴	high	<p>% own ITN – all (n=5951)</p> <p>% own any net - target groups (n=5951)</p> <p>% own ITN - target groups (n=5951)</p>	<p>Positive (18% to 36%, p<0.001)</p> <p>Positive (3 groups combined for target groups; all SS at p<0.05)</p> <p>Positive (same as above)</p>
Kikumbih et al. 2005	Survey of randomly selected HHs on net use in intervention and control districts	medium	<p>Knowledge of voucher scheme as a predictor of net ownership (n=268)</p> <p>ITN coverage among children under 5 (n=268)</p> <p>Bed net coverage among pregnant women (n=268)</p>	<p>Positive (1.104, p<0.05)</p> <p>Positive (84% vs. 32%, p<0.001)</p> <p>Positive (44% vs. 89%, p=0.004)</p>

⁴ Due to the limit of three variables per study per outcome category, an outcome % own any ITN (all) was not used in synthesis. The finding for this variable was a positive effect at p<0.001.

Marchant et al. 2008	Cross sectional surveys on ITN ownership and use of HH	medium	ITN ever treated – voucher as predictor (n=7160) ITN effectively treated – voucher as predictor (n=6344)	Positive (p<0.001) Positive (p<0.001)
<i>Uganda STI services</i>				
Bellows 2009	HH survey of STI prevalence, knowledge and treatment utilization before and after the intervention	medium	% seeking treatment for STI symptoms post intervention - men and women (n=2125)	No effect (34% to 38% for women and 37% to 37% for men, both NSS)
<i>Zambia general health services</i>				
Kondo and McPake 2007	Economic models of characteristics that may predict choice of payment for health services	Low	Health attendances per one year rates of vouchers versus pre-payment (n=5598) Health attendances per one year rates of vouchers versus user fees (n=574)	Negative (1.12 vs. 1.23, SS) Positive (1.75 vs. 1.29, SS)
<i>Zambia ITNs</i>				
Grabowsky et al. 2005	Cross-sectional survey on ITN ownership and use with retrospective component	medium	% of households with an ITN (n=406)	Positive (51% to 76.2%, SS)

SS = statistically significant at p<0.05; NSS = not statistically significant at p<0.05

ANC=Antenatal Care; PNC=Postnatal Care; FP=Family Planning

For the *quality* outcome category, the evidence from three voucher programs, six studies, and 13 outcome variables found modest evidence that voucher programs were able to improve some dimension of quality for health goods/services. A conclusion of modest positive evidence was made because there were only three voucher programs evaluated instead of the required four for robust evidence.

Table 5: Quality outcome variables included in the synthesis

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
<i>Bangladesh maternity</i>				
Schmidt et al. 2010	Data extraction on caesarean sections from district health facilities	low	% of facility deliveries as caesarean section (poor quality – so fewer or no difference between controls considered positive) (sample size not given)	Positive (SS not given, however graph indicates c-section rates below controls over time)
Rahman et al. 2009	Pre/post intervention survey of service providers, field workers and poor pregnant women	medium	% of services delivered during ANC visit (n=714) % providers performing well on quality indicators at ANC visits	Positive (series of variables that all had SS increases) Positive (series of variables that all had SS increases)
<i>Nicaragua cervical cancer screening</i>				
Howe et al. 2005	Clinical records review of Pap screenings and	medium	Reliability of detection PPV (n=1448)	Positive (68% compared to 53.2%-59.7%)

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
	pathology reports			NBCCEDP; Bethesda 70-75% ⁵)
<i>Nicaragua reproductive health (adolescents)</i>				
Meuwissen et al. 2006(a)	Female simulated patient visits before, during and after intervention	medium	% of providers with appropriate family planning treatment (n=33)	No effect (NSS difference from before to during)
			% of providers with appropriate STI/HIV prevention treatment (n=33)	No effect (NSS difference from before to during)
			% of providers with appropriate organization of clinic (n=33)	No effect (NSS difference from before to during)
Meuwissen et al. 2006(b)	Before and after interviews with physicians assessing knowledge and attitudes	medium	Mean scores of doctors' knowledge of contraceptive use and STI prevention and treatment (n=37)	Positive (6.4 to 8.0; 2.7 to 5.2, SS)
			Mean scores of doctors' attitudes towards SRH accessibility and contraceptive use (n=37)	No effect (5.4 to 7.2; 3.9 to 4.9, NSS combined)

⁵ Although the 68% finding was less than the 70-75% Bethesda range, the effect was still deemed "positive" since the 68% exceeded the National Breast and Cervical Cancer early Detection Program in the USA and the intent of the authors was to show that the Nicaragua program could have comparable results to those in developed countries.

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
			Mean scores of experiencing medical barriers due to erroneous knowledge or socio-cultural values (n=37)	Positive (4.9 to 6.9; 5.5 to 7.0, SS)
Meuwissen et al. 2006(d)	Cross-sectional community-based survey comparing voucher users to non-voucher users	medium	<p>Patient satisfaction with voucher as explanatory variable (n=700)</p> <p>Satisfaction with reception, with voucher as explanatory variable (n=700)</p> <p>Stated that doctor's explanations were clear with voucher as explanatory variable (n=700)</p>	<p>Positive (AOR 2.23, SS)</p> <p>Positive (UOR⁶ 1.99, SS)</p> <p>No effect (AOR 1.37, NSS)</p>

SS = statistically significant at $p < 0.05$; NSS = not statistically significant at $p < 0.05$

PPV=Positive Predictive Value

Six voucher programs with six studies and eleven outcome variables were used in synthesizing the evidence on *health impact*. The evidence indicates that voucher programs did not have a significant effect on health outcomes; however, this conclusion was the only outcome found to be unstable in a sensitivity test. The sensitivity analysis was conducted to determine whether the synthesis results were unstable or fragile, meaning that small changes in the outcome data could easily change the conclusions. The conclusions for targeting, utilization, and quality all withstood the three step sensitivity test of adding one positive outcome variable, adding one *no effect* outcome variable, and deleting the median outcome variable. The conclusion of *no effect*

⁶ Adjusted odds ratio not given for this variable.

for health impact, however, appeared to be unstable with one additional positive outcome variable changing the conclusion to *robust* evidence.

Table 6: Health Impact outcome variables included in the synthesis

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
<i>Bangladesh maternity</i>				
Rahman et al. 2009	Pre-post survey with no controls	medium	% experiencing NO life-threatening complications during pregnancy (n=463)	Positive (27% to 75%, SS)
			% experiencing NO life-threatening complications during delivery (n=387)	Positive (41% to 75%, SS)
			% experiencing NO life-threatening complications post-partum (n=850)	Positive (44% to 70%, SS)
<i>India maternity</i>				
Bhat et al. 2009	Cross-sectional survey on demographic information of randomly selected rural pregnant women	low	% complications during postnatal period (n=656)	No effect (10% in voucher users and 26% in non voucher users; NSS difference)
<i>Nicaragua STI care for high-risk groups</i>				

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
McKay, et al. 2006	Time series analysis of STI prevalence	medium	Prevalence of STIs with time lag between voucher distributions as explanatory variable (n=20 treatment rounds)	Positive (linear relationship, SS p=0.004)
<i>Taiwan IUDs</i>				
Chang et al. 1969	Case-control study using government registries and matching IUD acceptors and to non-acceptors	medium	Reduction in live births per 1,000 voucher acceptors compared to matched controls (n=6362)	Positive (cases 381 to 77; controls 376 to 195)
<i>Tanzania ITNs</i>				
Marchant et al. 2008	Multiple cross-sectional surveys	medium	<p>Malaria prevalence among target groups (children < 5, pregnant women) with use of voucher ITN as predictor (n=6051)</p> <p>Mean hemoglobin levels among target groups with use of voucher ITN as predictor (n=6096)</p> <p>Anemia prevalence among target groups (n=6096)</p>	<p>No effect (p=0.3, p=0.1)</p> <p>No effect (NSS, p value not given)</p> <p>No effect (p=0.6, p=0.4)</p>
<i>Uganda STI services</i>				

Study Citation	Study Design	CFA Grade	Outcome Variables (sample size)	Direction of Effect (Statistics)
Bellows 2009	Community household survey before and after the intervention	medium	Prevalence of syphilis among all respondents ⁷ (n=5184) Self-report STI symptoms	No effect (3% to 3%, NSS) No effect (42% to 40% ,NSS)

Using the synthesis system described earlier, the synthesis process evaluated the impact of vouchers on each outcome categories and assigned a conclusion. Table 6 summarises the findings for the overall synthesis conclusions, using all 64 extracted outcome variables.

Table 7. Synthesis of Results

Outcome Category	# of Programs	# of Studies	# of Outcomes	% with SS Effect	% SS Effect Positive ^a	Conclusion Category
Targeting	4 (2 services 2 goods)	6	9	88	87	Modest evidence
Efficiency	1 (services)	1	1	100	100	Insufficient evidence
Utilization	13 (8 services 5 goods)	16	30	83	96	Robust evidence
Quality	3 (services)	6	13	62	100	Modest evidence
Health impact	6 (5 services 1 goods)	6	11	45	100	No evidence of an effect

^a Of the total variables that found an effect

Sub-group Analysis

In addition to examining the overall outcome categories, the outcomes were analysed according to sub-groups of interest, including:

1. The type of voucher health goods/services
2. Location of the voucher program
3. Characteristics of the voucher program

Since only one outcome was found in the entire efficiency category, efficiency was not examined for sub-group analysis. Table 8 presents the findings for the sub-group analyses, excluding all findings of “insufficient evidence” where there were not enough voucher programs or outcome variables to sufficiently make conclusions. Within the sub-group analysis, almost half of all outcomes are “insufficient evidence” because they examine fewer than four variables or the outcomes represent only one voucher program.

Table 8: Synthesis conclusions for sub-groups^a

Sub-group	# of Programs	# of Studies	# of Outcomes	% with Effect	% Effect Positive ^b	Conclusion Category
TARGETING						
Type of voucher health goods/services						
Health goods (ITNs)	2	4	7	86	83	Modest evidence
Location of voucher program						
Africa	2	4	7	86	83	Modest evidence
Voucher program characteristics						
Private providers	2	4	7	86	83	Modest evidence
UTILIZATION						
Type of voucher health goods/services						
Health goods (ITNs)	5	7	13	100	100	Robust evidence
Health services (Maternity)	8	9	17	76	92	Robust evidence
Location of voucher program						
Africa	7	9	16	94	93	Robust evidence
Asia	4	5	10	80	100	Robust evidence

Latin America	2	2	4	75	100	Modest evidence
Voucher program characteristics						
Vouchers for <i>free</i> goods/services	10	11	19	84	100	Robust evidence
Vouchers for <i>subsidised</i> goods/services	3	5	11	91	90	Modest evidence
Public providers	3	3	5	100	80	Modest evidence
Private providers	5	7	13	77	100	Robust evidence
Public/private providers	4	5	11	91	100	Robust evidence
QUALITY						
Type of voucher health goods/services						
Health services (Maternity, STI)	3	6	13	62	100	Modest evidence
Location of voucher program						
Located in Latin America ^c	2	4	10	50	100	Modest evidence
Voucher program characteristics						
Vouchers for free health goods/services	3	6	13	62	100	Modest evidence

Public/private providers	3	6	13	62	100	Modest evidence
HEALTH IMPACT						
Type of voucher health goods/services						
Health services (Maternity and STI)	5	5	8	62	100	Robust evidence
Location of voucher program						
Asia	3	3	6	83	100	Modest evidence
Voucher program characteristics						
Vouchers for free services	3	3	6	83	100	Modest evidence
Vouchers for subsidised services	2	2	5	0	NA	Evidence of no effect
Private providers	2	2	5	0	NA	Evidence of no effect
Public/private providers	3	3	5	80	100	Modest evidence

^a The CFA scores were also used in determining the conclusion categories, see Appendix 2.8

^b Of the total variables that found an effect

^c Finding considered unstable per the sensitivity test described below.

Where there is sufficient data, the outcomes for the subgroup analyses often reflect the overall findings. Comparing the overall results with the sub-group analysis, two main differences are evident. First, the utilization conclusions changes from robust to modest for voucher programs in Latin America, those where the voucher is a subsidy as opposed to a free health good/service, and for voucher programs using only public providers. This change from robust to modest evidence occurs because less than four voucher programs are represented in these categories.

Second, the overall conclusion of no effect for health impact changed when looking exclusively at health services to robust evidence. Additionally, modest evidence of a health impact effect was found in voucher programs located in Asia, with free health goods/services, and the use of both public and private providers.

When comparing sub-groups, most differences appear to stem from the availability of evidence, with the difference between modest and robust evidence stemming from the number of programs reviewed in the literature rather than reflecting a different outcome in the evaluation findings. One outcome category where clear differences are seen between sub-groups is the health impact category. The findings on health impact indicate that free health goods/services have modest evidence of an effect whereas subsidised health goods/services have a finding of no effect. Similarly, the use of exclusively private providers has a finding of no effect, while the use of public and private providers finds modest positive evidence. However, the findings around health impact appear to be unstable, as described below.

A sensitivity analysis was conducted to determine whether the synthesis results were unstable or fragile, meaning that small changes in the outcome data could easily change the conclusions. For the overall conclusions listed in Table 7, the conclusions for targeting, utilization, and quality all withstood the three step sensitivity test of adding one positive outcome variable, adding one no effect outcome variable, and deleting the median outcome variable. The conclusion of no effect for health impact, however, appeared to be unstable with one additional positive outcome variable changing the conclusion from no effect to robust evidence.

In examining the conclusions listed in Table 8, one additional variable was found to be unstable, the modest effect for quality finding for voucher programs in Latin America changed to no effect when a no effect variable was added.

Discussion

The strongest finding from this review is that the evidence indicates that health voucher programs have increased utilization of health goods/services. There is also modest evidence that voucher programs can effectively target specific populations and can improve the quality of services. While these results are encouraging, the subsequent link that voucher programs improve the health of the population is not evident in the data analysed in this review. In some cases, the link between utilization of a health good or service and a health outcome may have a well-studied causal link (i.e. IUD insertion, skilled attendance at birth), and in other cases more evidence is needed. The health impact finding was found to be fragile in a sensitivity analysis meaning that one additional piece of evidence could change the conclusion.

The narrative synthesis approach and methodology used in this analysis allows for the synthesizing of evidenced from heterogeneous studies and the inclusion of cross-sectional studies that would likely be excluded from a more standard meta-analysis. As such, this approach allows inclusion of more information, however, the findings presented in this synthesis rely primarily on observational studies and do not provide statistical estimates of how much targeting, utilization, and quality may improve with a voucher program.

Another limitation of this research is that it relies on subjective judgements and therefore is not completely objective. While assessment tools, explicit criteria, and the use of two independent

reviewers serve as quality controls for the process, ultimately this approach does rely on the judgement of the reviewers to extract data and evaluate the confidence of the outcomes.

The lack of validation of the tools used in this analysis is also an important limitation. In particular, the CFA was adapted for this review when other tools that were initially designed for the quality assessment process were not appropriate for this analysis of such heterogeneous studies and outcomes. While the CFA was useful and appeared effective for this study with a 95% consensus rate, it has yet to be validated by other experts and may be improved to avoid homogeneous results, such as the nearly 70% deemed “medium confidence” in this review.

Finally, this review is limited to those evaluations that could be retrieved from the peer-reviewed and grey literature during the study period through the previously defined search strategy. There may be important and relevant evaluations that are not published in the peer-reviewed literature, are not available in libraries, or are not available on the Internet, and are thus not represented in this review. In addition, vouchers are a relatively new form of financing and many programs have not yet undergone evaluation.

Conclusions

The overall message from this systematic review is that voucher programs appear to achieve their intermediary goals of targeting specific populations, increasing utilisation, and improving quality. The overall findings on health impact indicate that vouchers do not have an impact on the health of populations; however, this conclusion was found to be unstable and one positive finding on health outcomes would change this conclusion to robust evidence. Future evidence from voucher programs currently being evaluated (17) may change the balance of this assessment, either from more definitive evidence of no effect or one of modest/robust effect.

The results of this review can offer recommendations for future evaluations in terms of the type of evidence needed to better understand the impact on health of voucher programs. Four main areas for further analysis and future research have been identified. First, this review has assessed the evidence around vouchers but not other demand-side financing approaches such as CCTs, user-fee exemptions, and health insurance programs. Applying the same systematic review methodology to a variety of financing mechanism would allow policy-makers to compare different health financing strategies to determine which strategies have shown to be more effective in reaching certain goals, such as increasing utilisation and improving health status, and under what conditions are certain financing strategies preferable to others.

Second, as stated in the previous section, this systematic review does not evaluate the implementation of voucher programs and does not systematically collect evidence on the lessons learned in program implementation. A review of this type would be very helpful for program managers who are designing voucher programs and would like information on the relative merits of specific program design. Questions that could be addressed in a systematic review focused on implementation include: what forms of targeting (e.g. individual-level, district-level, service-level) are most effective for specific health goods/services; what are the expected administrative costs associated with the program; what are the complicating factors that occur with regards to provider reimbursement?

In terms of new research, it is clear that there is a need for more evidence on the efficiency of voucher programs and a different approach for analysing data on efficiency. With 38 voucher programs identified during the course of this review, there is likely sufficient information existing to analyse whether health voucher programs have been efficient thus far. During the course of this review, some information on costs and efficiency was available; however, it did not meet the criteria for inclusion in the analysis. One possible strategy for analysing efficiency is to focus on collecting cost information for specific health goods/services under a variety of health financing models and to determine how voucher programs compare to non-voucher programs.

A final important area for future research and analysis is the incorporation of more evaluation information into this report as it becomes available. At present, there is a multi-site voucher program evaluation research underway on at least four voucher programs that should be completed in the next two years (17). These findings may change whether voucher programs are considered effective and including this information will be essential in understanding the extent to which voucher programs are successful in achieving their goals. Additionally, as new and future voucher programs are established, it is important that funders of health voucher programs and health voucher program managers include mechanisms for monitoring and evaluation so that more information can be included into the synthesis.

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III. Burnout at the Frontline: The Impact of a Reproductive Health Voucher Program on Health Worker Job Satisfaction in Uganda

Background

Low job satisfaction among healthcare workers in developing countries has been documented to increase risk of burnout and to have a negative effect on the quality of critical services [1,2]. Burnout among health workers, which is defined as the exhaustion of physical or emotional strength as a result of prolonged stress or frustration [3], may stymie efforts to reduce such priority health outcomes as maternal mortality [4].

Workloads, staffing and compensation are considered the three most important factors that affect job satisfaction, particularly for frontline healthcare workers such as nurses, lab technicians and nursing assistants who have limited control over their work environment [5]. When comparing frontline health workers such as nurses to managers such as physicians or clinical officers, frontline health workers consistently report lower level of job satisfaction and higher levels of burnout [6,7]. Burnout at the frontline is associated with decreased quality of care and increased costs related to staff turnover, all of which lead to highly devastating consequences in low-resource settings [8].

Many new health systems strengthening programs, such as voucher schemes, aim to increase the utilization of health services by poor populations in developing countries [9]. Successful programs may exacerbate the problem of burnout for frontline health care workers as a result of an increased number of patients using services unless staffing, salaries and workload issues are addressed [4]. This study examines the impact of a reproductive health voucher program in Uganda on job satisfaction of frontline health workers as compared to managers and non-participant frontline workers and managers.

Program Description

Sexual and reproductive health services are often seen as a barometer of quality for the wider health care system. In Uganda, sexual and reproductive health outcomes have been poor for many years which some see as a result of low-quality services and inappropriate policies that prevent innovation through private sector innovations or community based distribution channels. The prevalence of many sexually-transmitted infections (STIs) is at epidemic proportions [10]. The contraceptive prevalence remains low at 24% at the total fertility rate remains high at 6.3 children per woman [11]. More than half of women deliver without a skilled birth attendant where they are at higher risk of life threatening complications without access to adequate treatment [12].

In response to both poor health outcomes and aid inefficiency, the Uganda Ministry of Health, with support from the German Development Bank (KfW), launched an output-based aid (OBA) voucher program for STI treatment in 2006 [13]. The voucher program, managed by Marie Stopes International-Uganda, consisted of targeting women in poor communities through the distribution of a paper voucher and reimbursing accredited and contracted facilities to see voucher-bearing clients for STI diagnosis and treatment. Two years later (2008), maternal and newborn services were added to the voucher program. In 2010, the voucher program had been implemented in 117 health facilities 22 districts of western and southern Uganda.

Voucher programs are designed to give patients the economic power to access high-quality healthcare, to allow program planners to target high-risk or low-income patients for critical services, to augment general population utilization rates, and to contain per-unit costs through set reimbursement guidelines [14]. The objective of the voucher program is to increase the utilization of private health facilities by subsidizing the costs associated with clinic visits (i.e. consultation fee, supplies, and medication). The STI treatment voucher, called *HealthyLife*, allows the client and their partner to be seen for initial STI diagnosis and up to three follow-up visits. The maternal and newborn voucher, called *HealthBaby*, covers the costs of four antenatal visits and a postnatal visit, in addition to the delivery and obstetric referrals if needed.

Two recent reviews of the evidence for the effectiveness of health voucher programs suggest that these programs can have a powerful impact on the demand for and utilization of health services by poor people in developing countries [15,16]. In Uganda, early evaluations have shown similar results. The evaluation of the *HealthyLife* voucher program indicated that the total number of patient visits for STI-related laboratory tests at contracted clinics increased on average 32% in the first year of the program compared to the year prior to the program [17]. In terms of health outcomes, a quasi-experimental study of the *HealthyLife* vouchers found that syphilis prevalence fell by in areas near to contracted facilities and remained unchanged in areas near comparison facilities (aOR=0.62 95% CI=0.44-0.93) [18].

The purpose of this evaluation is to examine the impact of the *HealthyLife* and *HealthBaby* voucher programs on the job satisfaction of both management and frontline health care providers. Because increases in patient loads tend to have a disproportionately greater impact on burnout of frontline healthcare workers as compared to physicians and managers [4], this study examines the difference and associated factors of decreased job satisfaction among the two groups. This study is the first to document how the voucher program impacts management practices and job satisfaction of frontline workers and managers at participating facilities.

Methods

The *HealthyBaby* and *HealthyLife* voucher services were implemented by Marie Stopes International (MSI) on behalf of the Ugandan Ministry of Health, with financial support from the German Development Bank (KfW) and the World Bank's Global Partnership on Output-based Aid (GPOBA).

Sampling

The sample is comprised of healthcare providers who participated in the *HealthyBaby* or *HealthyLife* voucher program and providers at facilities in nearby districts who were eligible for the program but had not yet been recruited. Because the sampling universe was small and researchers wanted to ensure that all types of facilities were included, non-probability sampling was employed. Researcher purposively sampled from three geographic categories (town centers, town periphery and remote areas) and three types of facilities (private outpatient dispensaries, health centers (levels II-IV) and hospitals). Comparison facilities were selected based on the same criteria in three neighboring districts that had not yet been offered the voucher program.

The lead investigators conducted confidential semi-structured interviews with managers and frontline healthcare providers at these facilities in August 2010, four years after the STI voucher program was launched and 2 years after the maternal health voucher program was launched.

Provider recruitment procedures

Recruitment of providers for structured interviews went as follows. The lead investigator contacted each facility director by phone to get approval to visit the facility. The lead investigator then met with each facility's management to introduce the purpose and methods of the study and to request their permission to conduct interviews with providers. If the management was not available, the researcher spoke with the highest-ranking staff member. Once the management agreed to participate, investigators conducted confidential structured interviews with all available and consenting providers, which lasted between 30 minutes to one hour.

Provider selection requirements

Medical staff was selected for interviews from the following two staffing categories: managers (proprietors, administrators, clinical officers, midwives, and laboratory technicians) and frontline healthcare workers (nurses, nursing assistants or laboratory assistants). Participants had been working in facilities for an average of 4.6 years (4.3 at voucher facilities and 5 at control facilities).

Informed Consent

Written informed consent was obtained at the start of all data collection activities. Prospective study participants were provided with information about the study before any consent to participate was sought. Participants were informed about the requirements for participating in the study. Information was read to participants who verbally agreed and signed the informed consent document before they were interviewed. Providers retained a copy of the consent form that contained contact information.

Ethical clearance

The research protocol for this evaluation received approval from the University of California, Berkeley Committee for the Protection of Human Subjects (Protocol ID: 2010-02-853, approved June 2010) and the Uganda National Council for Science and Technology (Reference No: SS2385, approved August 2010).

Measurement and Analysis

A semi-structured survey that included both closed and open-ended questions was used to collect information on changes in workload, staffing and salaries in the past year (for controls) or since the voucher program started (for voucher program participants). All participants were asked about their current job satisfaction using the same scale (Appendix 2).

The validated Minnesota Job Satisfaction Scale [19] was adapted by two of the researchers and used to quantitatively measure individual job satisfaction. The scale was adapted to the local

context through expert review and pilot testing. The adapted 8-item scale had a maximum score of 5 for each question for a total overall score of 40 points. The scale asked providers to rate their satisfaction with items such as the way their job offer steady employment, the working conditions, the chance to make use of their abilities and the pay for the amount of work they do.

The adapted job satisfaction scale was found to have a measure of internal consistency when results were tested by calculating a Cronbach’s Alpha (coefficient = 0.75). In addition, qualitative responses to general job satisfaction questions were cross-checked with job satisfaction scores to test the sensitivity of the scale. For example, providers who reported feeling overworked had statistically significantly lower job satisfaction scores than providers who did not report feeling overworked (18 (SD=.4, n=22) vs. 24 (SD=1.8, n=47), $p < 0.0001$).

The survey tool was pre-tested with both a voucher and comparison provider as well as with program staff to assess how well providers understood the informed consent process and the survey tools. Responses to close-ended questions were analyzed quantitatively using frequencies, risk differences for dichotomous outcomes and t-tests for continuous outcomes. Responses to open-ended questions were analyzed using open coding. Responses from providers of similar response groups were grouped together and general themes were identified. Representative quotations were selected and are presented in this article.

Results

In August 2010, investigators interviewed 16 managers and 33 frontline workers from voucher facilities and 6 managers and 14 frontline workers from comparison facilities. All voucher facilities approached agreed to participate. All but two comparison facilities who were approached agreed to participate. The voucher and comparison sites were similar based on general characteristics (Table 1). Staff had worked at their respective facilities for an average of 51 months at voucher facilities and 60 months at comparison facilities. At voucher facilities, the voucher program had been in place for a minimum of one year and a maximum of three years.

Table 1. Voucher and Comparison Facility Characteristics

Respondent Characteristics	Voucher (N=49)	Comparison (N=20)
<i>Type of Provider</i>		
Managers	33%, n=16	30%, n=6
Frontline Workers	67%, n=33	70%, n=14
Facility Characteristics	Voucher (N=22)	Comparison (N=13)
<i>Type of Facility</i>		
Clinic	55%, n=12	62%, n=8
Health Facility	41%, n=9	31%, n=4

Hospital	<1%, n=2	<1%, n=1
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Impact of Voucher Program on Facilities (Table 2)

Workload Changes

All voucher managers and no comparison managers reported an increase in patient load in the past year (risk difference, 1; 95% CI 1-1, p<.001). All voucher frontline workers and 43% of comparison frontline workers reported an increase in patient load (risk difference, .57; 95% CI .31-.83, p<.001).

Salary Changes

Sixty-nine percent of voucher managers and no comparison managers reported any increase in salary in the last year (risk difference, .68; 95% CI .46-.91, p=.004). Thirty-three percent of voucher and 14% of comparison frontline workers reported an increase in their salary in the past year (risk difference, .19; 95% CI -.05-.43, p=.18).

Staffing Changes

Seventy-five percent of voucher managers and 50% of comparison managers reported an increase in staff members in the past year (risk difference, .25; 95% CI -.20-.70, p=.26). Seventy-nine percent of voucher and 36% of comparison frontline workers reported an increase in staff members in the past year (risk difference, .43; 95% CI .14-.72, p=.004).

Table 2. Summary of Risk Differences between Voucher and Comparison Sites

	Voucher N=49	Comparison N=20	Risk Difference (CI)	p-value
Providers who perceived a significant increase in patient load - % (n)				
Managers	100% (16/16)	0% (0/6)	1 (1,1)	<0.001
Frontline	100% (32/32)	43% (6/14)	.57 (.31, .83)	<0.001
Providers who reported a salary increase in last year - % (n)				
Managers	69% (11/16)	0% (0/6)	.68 (.46, .91)	0.004
Frontline	33% (11/33)	14% (2/14)	.19 (-.05, .43)	0.182
Providers who perceived an increased in staff numbers - % (n)				
Managers	75% (12/16)	50% (3/6)	.25 (-.20, .70)	0.262
Frontline	79% (26/33)	36% (5/14)	.43 (.14, .72)	0.004

NOTE: The risk difference reported in this table is measuring the absolute difference in risk between the two groups.

Job Satisfaction

The job satisfaction scale included 8 items that each had a maximum score of 5 points for a maximum total score of 40 points.

Table 3. Summary of mean Satisfaction Scores among providers participating and not participating in voucher programs

	Voucher, N=49	Comparison, N=20	p-value
Average Satisfaction Scores - Mean (SD)			
Managers	27 (0.9), n=22	25 (0.5), n=7	< 0.0001
Frontline	20 (1.3), n=20	21 (0.8), n=11	0.03
p-value	<0.0001	<0.0001	
Satisfaction score if BOTH number of workers AND salary increased - Mean (SD)			
Managers	27 (3.9), n=6	0, n=0	--
Frontline	24 (3.7), n=9	0, n=0	--
p-value	0.16	--	
Satisfaction score if salary increased but NOT number of staff - Mean (SD)			
Managers	31 (3.9), n=1	0, n=0	--
Frontline	23 (3.5), n=2	21 (1.4), n=2	0.64
p-value	--	--	
Satisfaction score if number of staff increased but NOT salary - Mean (SD)			
Managers	28 (0.7), n=2	26 (0.7), n=2	0.11
Frontline	22 (1.2), n=15	19 (1.2), n=5	0.20
p-value	<0.0001	0.0007	
Satisfaction score if NEITHER number of workers nor salary increased - Mean (SD)			
Managers	26 (0.7), n=2	25 (1.2), n=3	0.44
Frontline	19 (1.7), n=6	22 (5.7), n=5	0.31
p-value	0.0016	0.42	

Average satisfaction scores:

Voucher managers had an average satisfaction score of 27 (SD=0.9, n=22) and comparison managers had an average score of 25 (SD=0.5, n=7) ($p<0.0001$). Voucher frontline workers had an average score of 20 (SD=1.3, n=20) while comparison frontline workers had an average score of 21 (SD=0.8, n=11) (not statistically significant). Both the differences in scores between voucher managers and frontline workers and comparison managers and frontline worker are statistically significant ($p<0.001$).

At facilities where salary and staff has increased since the start of the voucher program:

Voucher managers who reported both any salary increase and any increase in the number of workers reported at satisfaction score of 27 (SD=3.9, n=6). No comparison managers reported experiencing an increase in both. Voucher frontline workers who reported a salary increase and an increase in the number of workers reported a satisfaction score of 24 (SD=3.7, n=9) and no comparison frontline workers reported having experienced both. The difference between the average satisfaction scores of voucher managers and voucher frontline workers is not statistically significant.

Most voucher managers who experienced an increase in their salary and staff expressed confidence in the overall performance of their health facility.

“Once we started the voucher program, the clinic stabilized financially. I have hired new staff, a comprehensive nurse, to assist in caring for the increased patient load we are seeing.”

-Proprietor, Clinic

“I have been able to buy drugs, supplies and new equipment such as a baby weighing scale. I have also improved the structure of the facility by tiling the roof and providing new benches in the waiting room. I have hired a new staff member, a comprehensive nurse, to assist in caring for all the increased patient load we see.”

-Proprietor, Health Center

“Before the voucher program, women would come in so late and we would see many neonatal deaths. Now, they come early and we are able to identify risks early and save many babies and mothers.”

-Manager, Antenatal Clinic

Many frontline workers at voucher facilities who experienced both increases expressed a greater sense of achievement in their work.

“I am seeing more patients which allows me to get more experience and to improve my skills. Now, I am more confident in my abilities.”

-Nurse, clinic

“The voucher programs increased the number of patients that we meet and are able to educate about health issues. When they are here, clients can be referred for other services as well.”

-Nurse, Health Center

At facilities where salary has increased but additional staff had not been hired since the start of the voucher program:

One voucher manager who reported a salary increase but not an increase in staff hired reported at satisfaction score of 31. No comparison managers had this experience. Of frontline workers who reported a salary increase but no hiring of additional workers, voucher frontline workers reported an average satisfaction score of 23 (SD=3.5, n=2) and comparison frontline workers reported an average score of 21(SD=1.4, n=2). These averages are not statistically different (p=0.64).

All frontline workers at voucher facilities who reported salary increases but no staff increases expressed feeling overwhelmed by the heavier patient load.

*“We are overworked – we are seeing double and triple the amount of women in the antenatal clinic. New staff needs to be hired to manage the increased workload.”
Nursing Assistant, Clinic*

*“The one disadvantage of the voucher program to providers is that we are overworked. The small allowances we are given are helpful, but we are seeing so many more clients because women are coming earlier for care.”
Midwife, Hospital*

At facilities where staff has increased but no salary increases since the start of the voucher program:

Of manager that reported an increase in staff members but not in their salaries, voucher managers reported an average satisfaction score of 28 (SD=0.7, n=2). Comparison managers reported an average score of 26 (SD=0.7, n=2) (not statistically significant). Of frontline workers who reported an increase in staff members without a salary increase, voucher frontline reported an average satisfaction score of 22 (SD=1.2, n=15) and comparison frontline reported an average score of 19 (SD=1.2, n=5) (not statistically significant). The differences between the average satisfaction score for voucher managers and frontline workers is statistically significant (p<0.0001) as is the difference between comparison managers and frontline workers (p=0.0007).

Many frontline workers at voucher facilities expressed some frustration with the management because of the lack of compensation for the additional workload but were satisfied that new staff had being hired and that eventually their workload would be changing.

*“They have hired new people but they have not yet been trained. I would like to be compensated for the increased work. Client load goes up but my salary doesn’t. I have not received the agreed upon payments even though the client load keeps increasing.”
-Lab technician, Clinic*

*“The management has hired new staff, a midwife and two nurses. But we are still overworked without an increase in pay.”
-Midwife, Hospital*

Some voucher frontline workers and managers feel that the program has increased chances for employment in remote areas.

“The program has helped in the retention of service delivery personnel in the rural areas.”

-Manager, Health Center

“This program has offered me employment. I was hired 5 months ago to help with the new clients.”

-Nurse, Clinic

At comparison clinics, many managers and frontline workers expressed concern that there is not enough work to go around which has a negative affect on their job satisfaction.

“We hired a new midwife but we are not busy enough and are not getting enough experience here. We also lack resources.”

-Manager, Clinic

“We have hired a new person but we have not seen an increase in revenue this past year. I think patients these days find it hard to afford to get treatment. People are poor and the cost of drugs has increased”

-Nursing Assistant, Clinic

At facilities where NEITHER salary nor staff has increased since the start of the voucher program:

Of managers who reported neither an increase in staff members nor an increase in salary, voucher managers reported an average satisfaction score of 26 (SD=0.7, n=2) and comparison managers reported an average score of 25 (SD=1.2, n=3). These averages are not statistically different. Of frontline workers who reported neither an increase in staff members nor an increase in salary, voucher frontline workers reported an average satisfaction score of 19 (SD=1.7, n=6) and comparison frontline workers reported an average score of 21.5 (SD=5.7, n=5). These averages are not statistically different. The difference between voucher managers and frontline workers is statistically significant ($p=0.0016$) while the difference between comparison managers and frontline workers is not.

Voucher managers seemed to recognize the benefits of the program to the overall facility but reported that the lack of compensation for providers through salary or staff may be a downside to the intervention.

“One benefit is that [the voucher program] has improved my profile in the district as a midwife and it has resulted in increased recognition of this facility as a place of high quality care.

- Manager, Clinic

“I have not been compensated for the increased workload as a result of the program. Some allowances need to be given to maintain provider motivation. The program needs to ensure that providers benefit from the program.”

-Manager, Clinic

Voucher frontline workers who experienced neither an increase in salary nor in staff were much more disgruntled about their work situations. They did not express positive attributes of the program. Many were aware that new revenue had come into the facility but felt that it was not being used to support them to do their jobs.

“The only thing that the voucher money has been spent on is maternity equipment. I am seeing more patients and improving my skills but I am overworked.”

-Nurse, Health Center

“I am working alone – I need an assistant but cannot ask for support. I have not received additional payments even though the clients are increasing. My motivation is low because of my low salary.”

-Lab Assistant, Health Center

Manager at comparison providers who reported neither a salary nor a staff increase had similar average satisfaction scores to voucher managers. These providers attributed lack of patient utilization to external factors such as a generally depressed economy.

“We have not seen an increase in patients in the last year. People are poor and supplies are expensive. I want to provide high quality services, but we do not have the resources to buy all the necessary supplies.”

-Proprietor, Clinic

Comparison frontline workers who reported neither a salary nor a staff increase had higher, but not statistically significant, average satisfaction scores than voucher frontline workers. They did not express the same frustration as voucher frontline workers and exhibited some hope that patient utilization would increase if they provided better quality services.

“I am most satisfied when I have the chance to help others but sometime there are no patients even though we can provide specialized services.”

-Nurse Midwife, Clinic

Discussion

All voucher managers reported an increase in patient load, three quarters saw an increase in the number of staff at their facility, and nearly 70% reported an increase in their salary in the past year – all of these changes were reported by comparison providers to have occurred to a lesser degree or not at all. On average, managers had higher satisfaction scores than frontline workers but this relationship changed under different compensation circumstances.

While there is not enough data to examine these differences when salary alone changed, we can see that when the number of staff increased, managers were statistically more satisfied than frontline workers. Perhaps an increase in staff is a sign of a prospering health center for managers but a potential threat to job security for frontline workers. This relationship holds true

when voucher providers reported that neither the number of workers nor salaries increased but does not hold at comparison facilities. This may be due to the fact that while compensation may not have trickled down to frontline workers, from a managers perspective the program is bringing other benefits to the facility such as community recognition. Frontline workers at voucher facilities who did not experience an increase in salary or staffing appeared to have the lowest satisfaction scores and this was supported by their qualitative responses.

The qualitative data illuminate the level of frustration felt by frontline workers at voucher facilities. Providers who received an increase in salary but not in staff were unsatisfied because they felt overwhelmed by the workload and expressed that the mostly small salary increases or stipends were not enough to compensate for the additional work. Hiring new workers to more evenly distribute the workload appeared to have more of a positive impact on frontline satisfaction than salary increased or stipends. While there was still frustration with the workload, there was a sense that the management was making adjustments and that the program was beneficial because it was providing employment opportunities and giving them a chance to use their skills. But experiencing neither salary nor staff increases left frontline workers angry and frustrated with both the health facility management and the voucher program.

The trend in satisfaction scores for frontline comparison providers in response to compensation was in the opposite direction as voucher workers. Comparison frontline workers' satisfaction scores decreased the most when there was an increase in the number of workers but not in salary. From the qualitative data, we see that comparison providers were not experiencing the extra workload that voucher provider experienced and as a result felt unmotivated by the fact that they were not getting the opportunity to use their skills or gain the experience they need to progress in their jobs. But comparison providers, both managers and frontline, who experienced neither staff nor a salary increase, were not as unsatisfied as those that saw an increase in staff. These providers did not have to compete for the very little work there was and chalked the low utilization rates up to a general economic depression and not an indication of a failure of their managers or facilities.

Limitations of this study include the small sample size, which resulted in findings that were suggestive of trends instead of statistically significance. Triangulation with qualitative data helps to support non-statistically significant trends. In addition, the adapted job satisfaction scale was not validated and, despite a satisfactory reliability score, should be interpreted with caution. Finally, the comparison group used in this study was of unknown equivalence to the voucher group. Although the comparison facilities would have been invited to join had the program expanded to their district, facility behavior in voucher districts elsewhere suggests that not all would have joined. According to program managers, approximately 30% of facilities invited to join the voucher program drop out due to lack of interest or delays in decision-making by proprietors. In the next study, comparison facilities could be asked their level of interest in joining the program to help determine potential drop-outs. While this limitation opens questions about the comparability of the groups, there was no sufficient way to determine which facility would be more or less likely to drop out.

While this study present some new and suggestive data about the impact of voucher programs on clinical staff, further studies that examine the effect of length of time a facility has been participating in a program with job satisfaction, the difference between types of facilities (public,

private, faith-based) and types of services (STIs vs. reproductive services) and the impact of satisfaction on service quality would be even more useful for policymakers and program planners.

Conclusion

These results indicate that while the voucher program appears to increase the utilization of services, the quality of those services as measured by provider job satisfaction may be tempered by a facility's ability to provide a healthy incentive environment for their staff at every level. The owner of a private health facility decides the number of staff and their salary. When owners do not feel confident in long-term cash flow, or wish to increase their profits by working current staff harder for the same salary, these findings suggest that frontline workers may feel less satisfied when a voucher program is initiated.

Frontline health workers are critical to improving the reproductive health of a population. The providers who participated in this study appeared to respond positively to the opportunity to use their skills, gain clinical experience and serve their communities as a result of the program but indicated a need for extrinsic motivation from monetary compensation or additional staff hires to reward them for their additional work. In regions where the shortage of frontline health workers is over 50%, we cannot afford to diminish the importance of job satisfaction and should prioritize the development of strategies to support frontline health workers when implementing new programs. Incentive strategies for staff and administration guidance for managers will be important components of any successful voucher program.

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IV. Redeeming Qualities: Factors that Impact Women's Use of Reproductive Health Vouchers in Cambodia

Background

Within Asia, Cambodia has some of the poorest maternal health indicators. Following years of war, genocide, and occupation, the country has struggled to rebuild its health care system. The maternal mortality ratio is estimated at 460 deaths per 100,000 live births -- the highest in the region [1]. The low prevalence of contraception use for spacing and limiting births, the low use of skilled attendance at birth and the lack of emergency obstetric care when complications arise are seen as the leading contributors to these high rates of death [2].

Underutilization of critical services in Cambodia is the result of both supply and demand side barriers, but cost remains one of the greatest impediments for the poor. User fees were introduced in public health facilities in Cambodia in 1997 with the goal of injecting funds into the health system, which would enhance the quality of services. But studies from around the world have shown that user fees have a strong negative effect on the use of healthcare services by the poorest [3-4]. Ten years later, more than two thirds of total health expenditure came from direct out-of-pocket payments (USD 35 per capita, 2007) and contribute to unmanageable healthcare-related debt, hitting the poor the hardest [5]. The need for some sort of safety nets for poor and vulnerable was clear.

In an effort to extend the reach of public health care coverage to the poor, especially in the domain of child and maternal health, the Cambodian government developed a National Social Protection Strategy for the Poor and Vulnerable in 2000. Part of this strategy includes the Health Equity Fund, which is designed to reduce financial barriers to accessing health services at the provincial hospital level. Evidence from several studies suggests that these funds have successfully reduced out-of-pocket payments and health care-related debts [6]. In 2007, the government set out to work with various foreign donors to find a complementary strategy to the existing Health Equity Fund that would extend to the primary care level. Several pilot programs were launched to see if voucher schemes might be the answer. Evidence from one pilot program that was tested in 2008 suggested that a voucher scheme contributed to increasing the number of deliveries in public health facilities [6].

In 2011, the German Development Bank, Kreditanstalt für Wiederaufbau (KfW), partnered with the Cambodian Ministry of Health to roll out a larger scale reproductive and maternal health voucher scheme. With a voucher, poor women can overcome some of the barriers to accessing family planning and safe delivery services including out-of-pocket and transportation costs. The Cambodia Vouchers for Reproductive Health Project is managed by Action for Health, a Cambodia organization, and is being evaluated by the Population Council. The program gives poor women a voucher to access quality services from pre-approved providers who are reimbursed for seeing the voucher client. This is one of three health care subsidy program that have been implemented in the area.

Within this system, subsidized vouchers are distributed to poor households. Patients theoretically receive vouchers for a specific health good or service such as maternal care or family planning along with information about how and why they might obtain the services, and this are able to eliminate traditional barriers to care. Patients redeem these vouchers at

accredited facilities, which have undergone a quality assessment and have signed a contract with a third party agency. A third party agency (i.e. a non-governmental organization or private company) processes claims from facilities for each voucher patient visit and delivers reimbursement funds provided by donors to either government ministries or directly to the third party agency.

In return for steady, reliable income, clinics are incentivized to maintain high quality services in order to satisfy clientele with the hopes of increasing demand. In sum, by targeting specific populations, increasing utilization, and enhancing quality and efficiency, it is expected that voucher programs will improve the health of populations.

Cambodia Program Design

The Vouchers for Reproductive Health Project was launched in early 2011 in three provinces in Cambodia. Within this system, subsidized vouchers are distributed to poor households. Patients receive vouchers for a specific health service, from maternal care to family planning to abortion, along with counseling about the types of services offered. Patients redeem these vouchers at accredited facilities, which have undergone a quality assessment and have signed a contract with the voucher management agency (VMA). The VMA (led by EPOS Consulting and implemented by Action for Health) processes claims from facilities for each voucher patient visit and reimburses the contracted government and private facilities.

The program was implemented in partnership with the Ministry of Health in government clinics as well as a couple non-profit Marie Stopes International clinics. No other private clinics were enrolled in this program. All providers at participating clinics were officially salaried employees although informal payments to public health providers is a common practice. The voucher management agency was charged with accrediting public clinics, hiring and training distributors and overseeing voucher distribution. Voucher distributors were trained and supervised by a voucher agent at each operational district and by an overall provincial coordinator. The Ministry of Health provided education sessions for distributors and supplied them with leaflets and other educational materials. Vouchers are offered for family planning counseling and services, prenatal care up to 4 visits, delivery services, postnatal care up to 6 weeks postpartum and abortion services as well as a cash transportation stipend (based on kilometers travelled).

Distributors were positioned throughout 9 operational districts within 3 provinces: Kampong Thom (Stung, Kampong Thom and Baray Santuk); Prey Veng (Preasdach, Peareang and Kampong Trabek); Kampot (Angkor Chey, Kampong Trach and Chhouk). Distributors approached households that were pre-identified by the Ministry of Planning as poor households meaning that they had numbered poor identification card with a picture of the whole family. This card gives household's access to the Health Equity Fund, which covers all care at the district hospital. The voucher program, then, acts to extend the reach of the health equity fund to the local health clinics.

The total number of vouchers planned to be distributed during the 2 ½ year project period (June 2010-May 2013) in the three provinces was 170,000.

Methods

Aims

This study aims to explore women's experiences with and perceptions about: 1) accessing health care services prior to the voucher program and 2) redeeming their reproductive health vouchers for services at accredited facilities since the program started.

Design

We used a modified grounded theory methodology. This qualitative study used focus group methodology to gather information on the shared experiences of both older (>25 yrs) and younger (18- 25 yrs) women who were eligible for the voucher program in the three program provinces. The three provinces purposively selected for this study were geographical diverse and represented one southern, coastal province, one province just outside the capital city and one in the northern part of the country in order to get a sense of the variety of experiences within the program participant population. The private Marie Stopes clinics were only accessible to those participants from the Kampong Thom region. Invitations to join the focus groups were extended to women who were eligible for participation in the voucher program. Program eligibility was pre-determined by program staff using a poverty grading scale to determine if a family falls under the program's pre-determined poverty line.

Participants and Recruitment

Ethical approval was sought and approved by both the University of California at Berkeley and the Ministry of Health in Cambodia. Villages in the three provinces that had been visited by voucher distributors were randomly selected from the list of all participating villages and village chief's were approached to participate. Once they agreed to participate, a date was set for the focus groups discussions. Village chiefs then invited program-eligible women in their villages to attend focus groups on the appointed day.

Participating villages were located in rural, agricultural areas where 75% of Cambodia's population resides. Most women live in wooden houses on stilts without electricity or running water. According to a 2004 population survey, about 40% of rural women in Cambodia are illiterate [7]. The total fertility rate in rural communities is approximately 4 children per women, approximately one child more per woman than in the urban areas of Cambodia [8]. The total fertility rate of the poorest wealth quintile is 4.9 [9].

Through memos and de-briefing, it was decided by the research team that we had reached theoretical saturation once we had conducted nine focus groups. The nine focus groups were conducted in villages located in three rural provinces (Kampot, Kampong Thom and Prey Veng). Four of the groups were held with women 18-25 years old and five of the groups were held with women over 25 years old. Thus, a total of 81 women self-selected to participate in this study. Other than age, specific demographic data were not collected.

Data Collection

Structured focus group guides were used to aid the facilitator in generating discussion and collecting data pertinent to the research question. The focus group format allowed participants to both share individual experience and to exchange ideas and experiences with one another as well as facilitators. Each group lasted a minimum of 2 hours and a maximum of 3 hours. All groups

were held at the village chief’s house, which was an easily-accessible, safe and familiar place to all participants.

Data Analysis

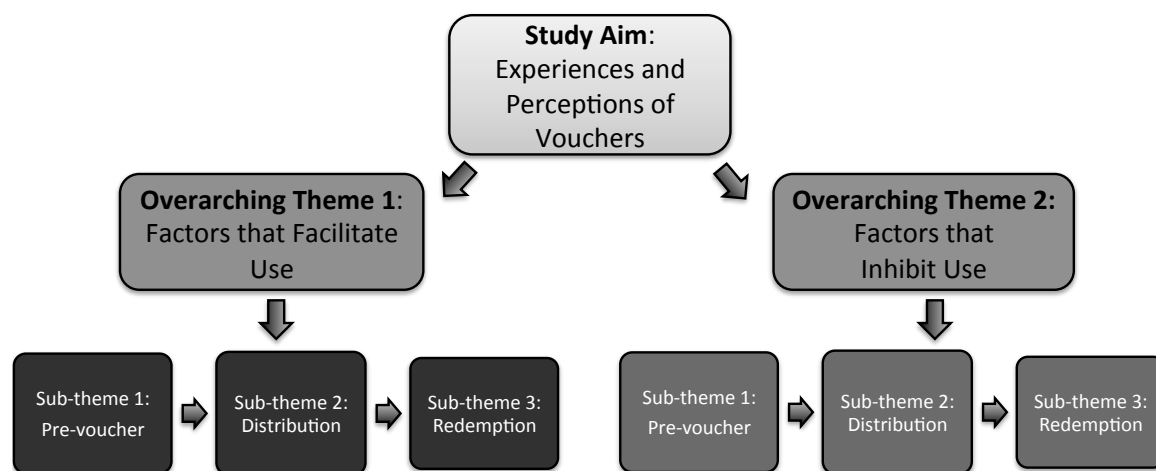
Focus groups were digitally recorded, transcribed verbatim and translated from Khmer into English. In addition, detailed memos were taken during the groups to record additional data including non-verbal and environmental information and these notes were used to support translation and aid in analysis. Transcripts were uploaded into Nvivo version 9 software [10], which is a qualitative data analysis software package. Data analysis was an iterative process, which comprised of multiple forms of coding. We engaged in a process of open coding [11] to find commonalities that reflected categories or themes that we used to begin to develop a preliminary conceptual framework. We then used axial coding [12] to relate initial themes to each other and formed a basic framework for analysis. Once we had developed a preliminary framework, we employed theoretical coding which comprised of integrating the textual data into our emerging theoretical framework [11].

In order to obtain inter-rater reliability, two researchers generated initial codes for emerging themes independently. The second researcher was a graduate student from UC Berkeley School of Public Health who traveled to Cambodia and was present at all focus groups. Any differences in codes, which were often differences in terminology rather than differences in concepts, were resolved through consensus.

Results

A framework was developed iteratively during the data collection period and refined during data analysis reflecting the factors affecting voucher use that emerged from the focus groups and researcher discussions (Figure 1).

Figure 1. Analysis Framework for Focus Group Discussion Responses Capturing Facilitating and Inhibiting Barriers to the Use of Health Vouchers



Based on women's discussions about accessing services before and after the voucher program, two overarching themes were identified in the data: 1) factors that facilitate voucher use and 2) factors that inhibit voucher use. Within each of these themes, three subthemes were identified: 1) pre-existing factors, 2) distribution factors and 3) redemption factors. Multiple categories were developed under each sub-theme. These categories, subthemes and themes which emerged within each area are explained with illustrative quotations from participants in the following section.

Overarching Theme 1: Factors That Facilitate Voucher Use

Sub-theme 1: Pre-existing Factors

Existing demand for family planning services, prior knowledge of complications, positive experiences at health center and household decision-making patterns regarding contraceptive use.

Participants discussed at length factors that facilitated or increased their willingness to seek reproductive health services that pre-dated the voucher program. In all nine focus groups, women expressed a desire to space or limit the number of children they had - mainly for economic reasons.

Birth spacing is very important to me. Having too many children means I don't have time to earn money. I am busy taking care of the children and have no time to work (Kampot Province, Over 25 yrs-old).

Other reasons for choosing to use/access RH care included the health concerns of closely-spaced births. Women said that they become weak when they have children too often. Women also recognized the importance of attending antenatal visits for iron supplements and check-ups and going to the health center for delivery services as a result of hearing about the women in their community who experienced complications or death during pregnancy and childbirth.

In all nine focus groups, women reported that they were familiar with the public health center. Most participants expressed having had generally positive experiences seeking care. The public health center was reported as being accessible to most women by bicycle or on foot and many women had the opinion that the cost for services was reasonable. Women reported having had positive interactions with medical staff and being able to get advice about family illness, uncomfortable side effects of medications, and family planning options. Most women felt that the public health center offered an adequate level of service quality for reproductive health services.

The health center has good services that we can depend on (Prey Veng Province, Over 25 yrs-old).

I choose to go to the [public] health center because it is close and it is safe for both mother and child. The doctors are qualified and they are friendly. They take care of us (Kampong Thom Province, Over 25 yrs-old).

Finally, women discussed their decision-making power in terms of who within their household makes reproductive healthcare decisions. In three of the nine focus groups, women expressed that they and their husbands made family planning decisions together.

If our family wants to have a child or wants to use contraception, we talk. Husband listens to wife and wife listens to husband. We listen to each other (Kampot Province, Over 25 yrs-old).

When asked about situations where there is a disagreement between husband and wife about fertility, responses varied. In three out of the nine focus groups, women reported that if they wanted the service and their husband disagreed, they would still go. Many of these women also expressed that if they had already “given many children to their husband,” they felt more comfortable going for services despite disagreement; this was only reported by women over 25 years old.

I make the decision. This is how I decide. When we have many children, the husband doesn't care. They only go to work but we are the ones at home (Kampong Thom Province, Over 25 yrs-old).

For me, even if my husband doesn't let me go, I still go because it would be me who is experiencing the problems (Kampong Thom Province, Over 25 yrs-old).

Sub-theme 2: Distribution Factors: Household distribution, influence of village chief, education about voucher program, information about services

Since the voucher program started in these communities, most women had received their voucher through home distribution. This was seen as a positive aspect of the program since they did not have to take the time or initiative to seek out the voucher on their own. Women reported that program staff worked with the village chief to distribute vouchers to the homes of all families who were considered poor using the poverty grading scale mentioned earlier. After distribution, most women generally reported accurate knowledge about the program.

They came down to the villages and walked house to house with the chief. If we wanted the family planning vouchers, they gave them to us. With the vouchers, it's free. But those who go without the voucher, it costs them money (Kampong Thom Province, Over 25 yrs-old).

During distribution visits, women also reported receiving reproductive health information such as availability of contraception at the health center and the importance of birth spacing.

Staff came down to the village and they said whatever contraception is available. We can use implant, tie the uterus, or take OK [brand of oral contraception] or injection. They have all kinds of contraception (Kampot Province, Over 25 yrs old).

There was no specific questions about the quality or content of the counseling that is meant to happen during voucher distribution and few mentions were made of this educational component in any of the focus groups.

Sub-theme 3: Redemption Factors: Free services, transportation reimbursement, ease of use, quality of life improvements

In nine out of nine focus groups, women agreed that the most attractive part of the voucher programs was the reduced cost of services. Women reported that being so poor makes everything in their lives difficult including going for services at the public health center despite

what many women considered reasonable fees. In addition, the transportation reimbursement provided an additional incentive since most women walked or rode a bike to the health center.

They said that we go with this voucher and we go there to get injection and they will not charge us and instead will give us some money for transportation to come home. They give us, like, 5000 riel (approximately USD 1.25). Like [name of community member], she went there and they gave her 5000 riel as I heard (Kampot Province, Over 25 yrs old).

In each of the nine focus group, there was at least one woman who reported that they had redeemed their voucher. Women stated that they were equally well-received at the health center when they presented with the voucher as when they presented without it and that they had an easy time redeeming the voucher for services.

When we come with the voucher, we see the doctor, they inject serum [injectable contraceptives] immediately and they give back 7000 riels (approximately USD 1.75) (Prey Veng Province, Over 25 yrs old).

Many women reported that community members who were eligible for the program would go to the health center more frequently now and that people who had never visited the health center before, perhaps because of cost, would now be able access these specific services.

When we have the voucher, we can go more often because we don't have to spend the money (Kampong Thom Province, 18-25 yrs-old).

I think it is good because some people cannot afford to go to the health center but with the voucher, it is free and those who have never gone before would start going (Kampong Thom Province, Over 25 yrs-old).

In four out of the nine focus groups, women who had used the voucher expressed that they felt that they had a better quality of life since the program began including better physical health, mental ease, hope and security.

As soon as I had the voucher, I could go to tie my Fallopian tubes right away according to my dreams (Kampong Thom Province , Over 25 yrs-old).

So we have no more fear and with less thinking, just think about how to work and feed our children (Prey Veng Province, Over 25 yrs-old).

When we are home, we won't get better. If we go to the doctors, they treat us and give us serum. It is easy. We can hope to survive (Kampong Thom Province, Over 25 yrs old).

[Since having the voucher] it feels like having a mother at home, leaving money for us. No matter how short we are on money, the mother will always have it for us (Kampong Thom Province, Over 25 yrs-old).

Overarching Theme 2: Factors That Inhibit Voucher Use

Sub-theme 1: Pre-existing: Perceptions about quality and cost of services, concern about side effects of family planning, preference for traditional delivery and postnatal practices, household decision-making patterns.

Despite the health center being close by the village and having had positive experiences with health staff, some women expressed concern about the quality and availability of medicines for general healthcare and the overall capacity of the public health center.

They give use medicines but they don't work when we take them. The medicines [for general healthcare] are kind of weak (Kampong Thom Province, Over 25 yrs-old).

Even though some women felt that the cost of services was reasonable, other women felt that any additional cost burden was too much for them. In addition, it was explained to the researchers by program staff, focus groups facilitators and the women themselves that delivering in a public health facility in these communities comes with an extra cost which women called “tea money”. Tea money is an unofficial payments of gratitude paid to the midwife that is considered by most to be required at public health centers and hospitals. Women reported that this payment was greater than what they would pay for a traditional midwife, who they may be able to pay in-kind.

In rural Cambodia, delivery fees for birth attended by midwives/nurses cost five times as much as those attended by TBAs (approximately \$27 vs. \$6) including unofficial fees which can be as much as \$10 paid to the public health providers at the time of delivery. In addition, there are transportation, accommodation, food and other miscellaneous costs that are incurred when delivering in a facility [10]. In three out of nine focus groups, women reported that these unofficial costs inhibit them from delivering in facilities.

If we have little money they are not happy and we have to pay tea money for thanks. We have to pay for the bed and tea money and if not enough they just ask me to pay more. They will not let use leave the [public] hospital until they receive money (Kampot Province, Over 25 yrs-old).

Yes, we must have someone come home and get money for [the midwives] (Kampot Province, Over 25 yrs-old).

While many women wanted to limit or space the number of children that they have, it was expressed in five out of nine focus group that women shared common fears and concerns about side effects of contraceptives they have experienced or that they have heard about other women experiencing including that they make them feel weak, make their breastmilk “hot”, give them fevers, affect their weight, inhibit their ability to work in the fields and cause irregular bleeding.

The doctor said that I have many children so I should use contraception. I had one injection but it didn't work with my health. I had blood discharge every month so she said to take the pills instead. But I didn't take them (Kampong Thom Province, Over 25 yrs-old).

Another factor that may inhibit women from using their vouchers is their preference for traditional practices around childbirth. In three focus groups, women reported having had all their children at home either by themselves or with a traditional birth attendant (TBA) without complication and saw no reason to change that practice. It was easier and cheaper than going to the health facility. In addition, transferring to the health center during labor was uncomfortable.

I never delivered in the hospital. All my three children were delivered at home. It was easy for me to deliver – even the [TBA] came late and my child was already born (Kampot Province, Over 25 yrs-old).

Finally, some household decision-making patterns around health care seeking behavior were also inhibitive. In five of the focus groups, women expressed feeling empowered to make family planning decisions either in collaboration with their husbands or on their own, while in three focus groups, women felt that if their husband did not agree with their desire to use family planning then they would not use these services in order to avoid conflict or other negative consequences. These sentiments were expressed by participants in focus groups of both age groups.

If [husbands] want [more children] and we resist then arguments will happen and trouble. So, we have to follow them (Kampot Province, Over 25 yrs-old).

If they want more children and we keep against them, they will walk away. They will stop giving us the money. They will leave us and the kids. They won't support us financially anymore (Kampot Province, Over 25 yrs-old).

Sub-theme 2: Distribution: Confusion about voucher program logistics, perceived poverty misclassification, missed distribution opportunities

The most commonly cited issue with the distribution process was that many women reported not understanding the program logistics. In four out of nine focus groups, women expressed not knowing where they could redeem their vouchers, where to get additional vouchers, or precisely which services were included. Many women reported relying on the village chief for information about the program. Although the village chief was consulted about the implementation of the project, individual women did not need to receive permission from the chief in order to get a voucher.

[If she wants a voucher] she should come to see the Village Chief or something...to help...I don't know what else to say (Kampong Thom Province, Over 25 yrs-old).

I don't know where they are available. I just know that the poor gets them. Other than that, I don't know where they come from (Kampong Thom Province, 18-25 yrs-old).

In three out of nine focus groups, women reported feeling concerned about how the poverty classifications were made. Poverty classifications were made by voucher program staff who visited the village and went door-to-door assessing poverty level based on a grading scale prior to the start of the program. Several women felt that they or a community member had been misclassified.

This house cannot get it. It is not considered poor. The roof is brick or metal. Unless you are living in a cottage then they won't consider you poor. Like me, I don't have a house but I live with my mother so they don't consider [me poor] as long as we have a house to live in (Kampot Province, Over 25 yrs-old).

Finally, in three focus groups, women missed the household distribution opportunity and were not sure how to get in contact with the program in order to get their voucher.

They came and tried to find [her] at home but she was not home. They went past [her] house and asked everyone for her name. So, she does not have the voucher (Kampot Province, 18-25 yrs-old).

Sub-theme 3: Redemption: Persistent fear of cost, disappointment that vouchers were only available for limited locations and services, confusion with other social protection programs, negative interactions with providers at hospital

Even with the voucher, in two out of nine focus groups women still felt that they would be expected to pay their midwife “tea money” for delivery services. The fear of having to pay these additional fees deterred them from using the voucher for delivery.

In addition, some women reported that they had wanted to use their vouchers at non-accredited health facilities or for non-covered services at accredited facilities and were turned down.

The bad point is that we cannot use it at the private clinic. They don't accept it. We can only use it at the public hospital (Kampot Province, Over 25 yrs-old).

There have been several other social protection programs implemented in this area including the Health Equity Fund that allows women to receive free delivery services at the government hospital as well as private organizations such as Marie Stopes that issued vouchers to poor households for reproductive health services over short periods of time. In three out of nine focus groups, when women were asked to show their vouchers they were not always sure which one to present.

Is it the blue voucher? The small one? I didn't bring it with me. I mixed it up (Kampong Thom Province, Over 25 yrs-old).

In three of the nine focus groups, women reported that when they presented at the provincial hospital with a voucher, they faced discriminatory treatment because they were not paying with money. There were only a few reported cases of discrimination and it was unclear which facilities these women had gone to and which vouchers they were using. It is also unclear if the negative reactions were a result of misunderstandings around program logistics, but this topic had great significance to the few women who reported it during the group conversation.

When we got to the [provincial hospital] and show them the poor voucher and tell them that we are poor, they said, 'I don't eat that paper, I eat with money' (Kampot Province, Over 25).

The voucher holder is not treated well. [The providers at the provincial hospital] are just relaxed and let us stay without paying attention. They are not coming often to see us like the people who pay. We have to give them some tea money for them to take care of us (Kampong Thom Province, Over 25 yrs-old).

A handful of smaller issues came up in conversations but were not classified as themes including a couple women reporting that they forgot to bring their voucher to their clinic visit and several women who thought that because the services were free, they may not be of high quality. These inconveniences and negative views may inhibit voucher use.

Discussion

This study explored the experiences of women accessing reproductive health services in rural Cambodia where many barriers to accessing care exist. Overall, women expressed positive feelings towards the voucher program, reporting that they sought earlier and more frequent care

with the vouchers. In addition, women described a feeling of security and mental ease knowing that they had access to free care and a transportation stipend. Women also gave descriptive feedback about their experiences seeking care and the results of these discussions offer a number of considerations for voucher program design and management that could enable managers to better tailor the program to the community.

Increasing the utilization of services is one of the most important aims of voucher programs. Before the voucher program, existing utilization patterns were impacted by a number of factors that range from physical access to clinics to experiences with side effects of contraception to relationships with providers. The way that the voucher program interacts with existing circumstances is informative for program staff, particularly at this early stage in program implementation when amendments can still be made. Taking into account women's existing perceptions and experiences with family planning may inform distributor's explanation of the program benefits. In addition, providers at accredited facilities may be able to address some of the negative impressions of certain contraceptives and to talk to women about how to begin a dialogue with spouses about the benefits of well-spaced births.

The distribution of the voucher to individual households was for the most part seen as a successful strategy for encouraging poor families to use reproductive health services as compared before the voucher program. But a more transparent poverty grading process that takes into account household assets in a more comprehensive way may be necessary with particular strategies in place for community input. In addition, if a house was missed during the distribution, clear information about where to obtain a voucher should be disseminated. Program participants should be able to contact an independent agent in order to obtain a voucher – this system should not rely on the village chief although the chief could be an important local resource and should receive adequate education on program logistics and purposes. In addition, women did not discuss the counseling or health information that should have been delivered by distributors. There may be a need for additional training of distributors not only on program logistics but on community-specific topics such as how to initiate a conversation about family planning within a household. Finally, a better branding strategy that would help eligible households be able to identify this particular program from the other social protection measures that are in place in Cambodia may improve usage.

Many women that participated in these focus groups had not yet had the chance to redeem their vouchers, but from their initial experiences, there remains some confusion about how and where to use the voucher, if there will be additional charges, and how providers will receive women presenting with vouchers. Perhaps accredited providers should also be counseled on how the program works and how they can make poor women feel welcome in their facilities. In addition, more explicit provider guidelines and information to patients about unofficial payments to midwives may need to be established and disseminated to both providers and patients. There may also be the need for a way to anonymously issue complaints when women have negative experiences using their voucher although this may not be an acceptable practice within the community.

One limitation of this study was the variability between facilitators in terms of their ability to encourage interaction and discussion between participants. An examination of participant responses by facilitator revealed that although some facilitators encouraged more discussion, the

content of the responses did not vary greatly. Another limitation is that young women spoke less overall than older women and therefore. An effort was made to examine and integrate the content from the younger women's group despite this limitation. Another limitation was the variability in transcription and translation process. We trained all transcriber and translators using the same training manual and asked them to use the same standardized transcription guide. It is still possible that important responses were misinterpreted or that meaning was lost in translation.

Focus groups were held at village chiefs' houses in an open-air setting and because most women who attended were familiar to each other, there is concern about the degree of privacy that participants experienced and about the impact of the lack of privacy on their willingness to disclose feelings about personal topics. After the discussions, Cambodian research assistants quietly asked women if they felt comfortable speaking freely about their healthcare behaviors in this environment and all women said they did. Finally, researchers who were not from the same community as the study participants conducted the data analysis and this data was interpreted from their cultural perspective. We asked local Cambodian researcher assistants who attended all focus groups and participated in note taking, memos and debriefing to review the results of the data analysis and their feedback was integrated.

Early information from beneficiaries who are interacting with a new program can lead to timely and responsive changes in the program's activities that can help to maximize program success. Some participants did express concerns about gaining access to services. However, in spite of this finding among some women, there seemed to be strong support for the program among the women who participated in these focus groups. Voucher programs are still considered a new strategy for increasing the utilization of health services for a targeted population. The evidence for the effectiveness of voucher programs is still being developed. In order to encourage utilization through these programs, early beneficiary feedback should be incorporated into program design. In addition, comparing the voucher strategy to other demand-creation or subsidy programs within this context in terms of cost effectiveness and quality would be an important step. This study highlights the importance of tailoring voucher programs to community needs, a strategy that can lead to more successful program outcomes.

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V. Conclusion

The research projects presented in this dissertation contribute to a body of evidence about maternal health vouchers that policymakers may look to in order to assess the potential of scaling up vouchers as part of global health policy. The first project, the systematic review, offered the opportunity not only to review the literature, but also to tease out the five main mechanisms of action of voucher programs and to look in detail at the theoretical and programmatic evidence for each. The two evaluations of voucher programs were designed and implemented with the input of voucher program managers and aimed to answer the “how” questions that emerge while larger impact evaluations are being conducted. Examining the impact on providers in Uganda and the perspectives of beneficiaries in Cambodia provided specific information about how these programs have affected key stakeholders within health systems. As a result of this dissertation experience, two aspects of voucher program implementation stand out as the most important next steps: 1) examining how policy makers might use evidence on health voucher to support efforts to strengthening health systems and 2) assessing how program implementers can better respond to the early experiences of beneficiaries (providers and patients) in order to tailor voucher programs to the local context while maintaining program fidelity.

If policy makers decide that voucher programs are a strategy that might work for a particular health system, it is essential that programs are integrated into the overall health system plan within a country. For the most part, the two programs examined in this dissertation were able to achieve this goal. In Uganda, the voucher program was primarily located within the private sector. This was in-line with an emphasis by the Ugandan government to forge public-private partnerships in the health care context. The Government of Uganda has acknowledged the importance and success of their private health care system in extending coverage of services to rural and remote regions. The voucher program offered the government a way to make that link stronger by providing a vehicle for government subsidies to targeted populations.

In Cambodia, the Ministry of Health is currently focused on increasing the capacity of the public health sector – building back what was destroyed by the genocide in the late 1970s. Part of the government’s effort includes establishing social protection programs for the poor. Voucher programs were seen as an opportunity to extend current social protection programs that exist at municipal hospitals into rural health clinics and to the poorest. All facilities included in the program required patients to pay user fees. The government realized that user fees may be a useful strategy for recuperating costs from those who can pay but that it excludes the poorest families from accessing critical services. The voucher program offered a way for these two strategies to exist simultaneously.

Once implemented, it is important that a voucher program can respond to the needs and reactions of beneficiaries. Responsive programming is a tenet of many public health initiatives. Striking a balance between a replicable program and one that is adapted to a specific political or cultural setting is a challenge. For example, vouchers for STIs and for maternal care have different implications for targeting, counseling and voucher distribution. There are also cultural adaptations that need to take place—for example, examining the role of village chiefs, which is not the same in both countries. Knowing who the gatekeepers are is very important. Program managers struggle to weigh the importance of fidelity to key program components with the desire to integrate community feedback and adjust programming to the local context. Policy-

makers may feel frustrated that a program that works in one setting cannot be transferred to another or scaled-up nationally. Advocates may sing the praises of a program that has shown successful outcomes as a result of community-based participation but policy makers may chalk it up to a unique phenomenon that is not sustainable. Voucher programs have at their essence a core set of programmatic components that must be in place for the sensitive incentive scheme to work but as can be seen in the implementation of the Uganda and Cambodia programs, it can be rolled out in ways that fit various macro-level political and cultural settings. Without a mechanism for stakeholder feedback early on in the program's lifecycle, micro-level components that can have a profound affect on program beneficiaries (both providers and patients) cannot be integrated into the program.

The two evaluations in this dissertation offer strategies for gathering community feedback in a timely and cost-efficient manner. While each has its limitations, they offer a proof-of-concept, demonstrating that community feedback can offer suggestions for adaptations that may increase the acceptability of a program and increase the potential for long-term sustainability. Vouchers should not be considered a panacea for all health system problems but they offer certain benefits, such as the ability to target a population, which may ameliorate issues of prioritizing limited health services. At this point, we have some evidence that for key health services such as maternal health and family planning, vouchers may be a useful strategy for ministries of health. What has not yet been tested but is of great interest is if these types of programs can transform into broader health policy such as public health insurance programs.

Further research on the potential for health vouchers should address the following questions: When do we have enough evidence to say whether a policy should be implemented or not? What are the most critical aspects of a voucher programs that must be in place to ensure fidelity to the model? What types of adaptations and modifications can be made while still delivering the "active ingredients"? What are the cost implications?

From some perspectives, all policy is effectively experimental. Perhaps early policy becomes a study in itself, but that does not mean we should not have a strong rationale or a good theoretical base for moving forward. Understanding why programs have worked and how current programs are functioning within their local contexts are first steps towards making policy decisions. In the case of vouchers and in many cases, decision makers are moving forward with program implementation while the necessary evidence for scale-up is still accruing. There is a need for better tools for measuring cost (both cost effectiveness and as compared to other demand-creation strategies) and quality (both of services delivered and of provider and patient satisfaction). There is also a tendency for evaluations to measure short-term outcomes and neglect to examine longer-term impacts and larger health systems implications.

These policy initiatives must undergo thorough evaluation – both impact evaluations and further examinations of mechanisms of action - and these policies should be corrected or terminated in response to those evaluations if we ever want to achieve evidence-based policy.

VI: Appendix 1. Confidence in Findings Assessment (CFA)

File name:

Dates of study period:

Population:

Intervention:

Comparison:

Outcomes:

Study Objectives and Design

1. What are the main study objectives?
2. What is the overall study design? What group below does the study design belong?:
 - a. True experimental – randomized control trial (pretest-post test control group, post test only, Solomon 4 group)
 - b. Quasi experimental – (time series, before-and-after with non-random controls)
 - c. Non experimental/observational – (case-control, cohort, cross-sectional)
 - d. Other - describe
3. Is this study design reasonable and appropriate given the study objectives?

Selection of Data

1. Is the sampling methodology appropriate given the study objectives?
Are there any concerns about the data source, such as potential biases or inaccuracies?
2. Are there any concerns about bias with regard to the sampling methodology?
3. Is the sample size sufficient to detect statistical differences?
4. Does the sample appear representative of the broader population of interest?
5. Are there concerns that any criteria used to include or exclude data could introduce bias?

6. How much data are missing or incomplete? Could the missing/incomplete data introduce bias?
7. Are there any other concerns about selection?

Comparability

1. Was there a comparison used (e.g. before and after, control districts, control facilities, individual controls, benchmarks, etc...)? Is this comparison appropriate given the study objectives?
2. Does the study fail to control for any important confounding factors that could reasonably explain findings?
3. For studies that use control groups, do the controls seem appropriate given the objectives of the research (e.g., reasonable criteria for defining controls, potential for leakage of the intervention, comparable in terms of demographic characteristics)
4. If matching or randomization were used, was this process carried out correctly?
5. For before-and-after studies without controls, is the time period reasonable to observe a change due to the intervention? Or, could the results be due to changes over time, regardless of the intervention?
6. Are there any other concerns about comparability?

Measurement

1. Do the measures (explanatory and outcome variables) seem appropriate given the study objectives?
2. Have the measures been validated or used in previous studies?
3. Are the measures subjective or tenuous? To what extent would a different observer or different day of observation change the results?
4. When controls are used, was the observer/interviewer blind to intervention or exposure status of the observation?

5. When controls are used, was the same methodology used to assess both treatment and control groups?

6. Are there any other concerns about measurement?

Analysis

1. If assumptions are made in the analyses, are these reasonable and/or based in the literature?
2. What statistical methods are used to analyze the primary outcomes? Are these methods appropriate given the study objectives and data? Would alternative methods be preferable?
3. If a sensitivity analysis is appropriate, was this conducted? Were important factors included?
4. If the main findings indicate an effect, what is the statistical significance level?
5. Are there any other concerns about analysis?

Final Considerations

1. Are there any conflicts of interest between the authors and findings that could potentially influence the findings?
2. Is there any information about the study design, data or measurement that is not given and essential for understanding the nature of the research?
3. Are the study limitation discussed appropriately?
4. Do the authors express confidence in the findings, or are they discussed as tentative or preliminary?
5. Are any confounding or distorting influences not accounted for? In other words, are there reasonable alternative explanations for the observed results?
6. Is it likely that the findings occurred by chance?
7. Are there any other major quality concerns that affect the confidence in study findings that have not been previously addressed in this assessment?

Overall Judgment – choose 1

- I have some MAJOR concerns about the methods used or the lack of information available on this study and therefore seriously question the findings. (*low confidence*)

- I have some MINOR concerns about the methods used or the lack of information available on this study and therefore would consider the findings with some caution. (*medium confidence*)
- I have NEGLIBILE concerns about the methods used or information provided on this study and therefore have confidence in the findings. (*high confidence*)

Appendix 2. Providers Survey Tool

Provider opinions on the impact of competitive reproductive health vouchers in Mbarara, Uganda (Protocol ID: 2010-02-853)				
Provider's Evaluation				
I am here today as an independent evaluation consultant to talk to you about your experience with the V&A program at this facility. This interview is completely confidential and your name will never be linked with your responses. I am hoping to hear your opinions on the day-to-day functioning of the voucher program and to get your ideas on areas for improvement.				
Did the Provider give his or her informed consent?			yes	no
FORM NUMBER				
Type of Voucher	(1) RH (2) STI (3) Both (4) Control		(1) (2) (3) (4)	
Type of Facility	(1) PNP (2) PFP (3) PNP faith based (4) Gov't		(1) (2) (3) (4)	
HC Level	(1) Clinic (2) HCI (3) HCII (4) HCIII (5) HCIV (6) Hospital		(1)(2)(3)(4)(5)(6)	
District	(1) Bushenyi (2) Ibanda (3) Isingiro (4) Kabale (5) Kanugu (6) Kirahura (7) Lyantonde (8) Mbarara (9) Ntungamo (10) Rakai (11) Rukungiri (12) Sembabule (13) Masaka (14) Bukomansimbi (15) Kalungu (16) Lwengo		# _____	
Facility Code			# _____	
Function #1	Proprietor = 1, Medical Superintendent = 2, Administrator = 3, Incharge = 4, MCO = 5, Medical Officer = 6, Clinical Officer = 7, Midwife = 8, Nurse/Midwife = 9, Nurse/ Nurse Assistant = 10, Lab Technician = 11, Lab Assistant = 12		# _____	
Function #2			# _____	
Function #3			# _____	
Now I am going to ask you questions about your experience with the V&A program. I understand that you may not have the facts in front of you, but I am most interested in your opinions and perspectives.				
1. General Functioning of the V&A Program				
1.1	How long have you worked at this facility?		months	
1.1a	Approximately when did the facility begin accepting vouchers?	DATE:		Don't Know (9)
1.2	[Admin] Are you able to pay salaries / [Provider] Do you get your salary paid on time (1) always, (2) often, (3) sometimes, (4) never (5) don't know?		(1) (2) (3) (4)	Don't Know (9)
1.2a	Do voucher claims get reimbursed on time 1) always, (2) often, (3) sometimes, (4) never (5) don't know?		(1) (2) (3) (4)	Don't Know (9)
1.3	What percentage of the patients you see in a normal day are voucher clients?		%	Don't Know (9)
1.4	What is the most common reason for your voucher clients visits? (1) sti testing, (2) sti treatment, (3) antenatal care, (4) delivery, (5) postnatal, (6) other			Don't Know (9)
1.5	What is the most common reason for your non-voucher clients visits? (write in – will code after data collection)			Don't Know (9)

2. Voucher Revenue				
2.1	From your perspective, has there been an increase in facility revenue since the voucher program began/in the past two years?	yes	no	Don't Know (9)
2.1a	If yes, how do you know? (write in – will code after data collection)			
2.2	If yes, what do you think this revenue has been used for? Do you think it has been used for (ask for each category):			Notes
2.2aa	To Pay Salaries	yes	no	
2.2a	To Increase Salaries	yes	no	
2.2b	Land Purchases	yes	no	
2.2c	Building Extensions/Facility Expansion	yes	no	
2.2d	New Equipment	yes	no	
2.2e	Infrastructure Improvements (generators, lighting, water)	yes	no	
2.2f	Training	yes	no	
2.2g	Medication and Supplies	yes	no	
2.2h	Patient Amenities (benches in waiting room, etc.)	yes	no	
2.2i	Patient Amenities (counseling and supportive services)	yes	no	
2.2j	Hiring better quality staff	yes	no	
2.2k	Other	yes	no	
2.2k_othe	Specify:			
2.3	Of the ones you mentioned, if you had to chose, which of them do you feel gets the most money? (1) pay salary (2) increase salary (3) land (4) bldg (5) equip (6) infrastructure (7) training (8) medication/ supplies (10) amenities1 (11) amenities2 (12) hire staff (13) other			Don't Know (9)
The next 5 questions are for Administrators ONLY				
2.4	[Administrators Only] Before the voucher program/two years ago, had you ever applied for a loan to improve the facility?	yes	no	
2.4a	If yes, how many?			
2.4b	If yes, for what did you use each loan?			

2.5	[Administrators Only] Since the voucher program started/within the last two years, have you applied for any loans to improve the facility?	yes	no	
2.5a	If yes, how many?			
2.5b	If yes, for what did you use each loan?			
2.6	Since the voucher program began/ in the past two years, how many new providers (i.e. nurses, midwives, lab techs, doctors) have you hired?			
2.6a	Since the voucher program began/ in the past two years, how many providers (i.e. nurses, midwives, lab techs, doctors) have you lost?			
3. Job Satisfaction				
	For this section, ask yourself: How satisfied am I with this aspect of my job? (1) Very Satisfied, (2) Satisfied, (3) Neutral, (4) Dissatisfied or (5) Very Dissatisfied?			
3a	The chance to do things for other people	(1) (2) (3) (4) (5)		Don't Know (9)
3b	[skip for admin] The competence of my supervisor in making decisions	(1) (2) (3) (4) (5)		Don't Know (9)
3c	The way my job offers me steady employment	(1) (2) (3) (4) (5)		Don't Know (9)
3d	The pay for the amount of work I do	(1) (2) (3) (4) (5)		Don't Know (9)
3e	The chances for advancement in my job	(1) (2) (3) (4) (5)		Don't Know (9)
3f	The way my co-workers get along with each other	(1) (2) (3) (4) (5)		Don't Know (9)
3g	[skip for admin] The way my boss handles workers	(1) (2) (3) (4) (5)		Don't Know (9)
3h	The working conditions	(1) (2) (3) (4) (5)		Don't Know (9)
3i	The way this health facility is organized	(1) (2) (3) (4) (5)		Don't Know (9)
3j	The chance to make use of my abilities	(1) (2) (3) (4) (5)		Don't Know (9)
	Do you feel you have (1) very secure, (2) somewhat secure, (3) a little secure or (4) not at all secure employment?	(1) (2) (3) (4)		Don't Know (9)
3.1	What is the <i>most</i> satisfying part of your job? (write in – code later)			Don't Know (9)
3.1a	What is the <i>least</i> satisfying part of you job? (write in – code later)			Don't Know (9)
	On average, how many patients so do you seen per day?			Don't Know (9)
3.2	What is the average waiting time for patients?		mins	Don't Know (9)
4. Competition				
4.1	What is the name of the next nearest facility?			Don't Know (9)
4.1a	Do they accept vouchers?	yes	no	Don't Know (9)
4.1b	What type of facility is it: (1) PNP (not faith-based), (2) PFP, (3) PNP (faith-based), (4) gov't (5) other?	(1) (2) (3) (4) (5)		Don't Know (9)

4.1c	Other:			
4.2	How many kilometers is that clinic from your facility?		km	Don't Know (9)
4.3	Do you think patients have a choice between going to another facility and coming here?	yes	no	Don't Know (9)
4.4	Why do you think clients come to <i>this</i> clinic over others? (<i>mark one</i>)			Don't Know (9)
	Distance (1) Presence of a Voucher (2) Wait Time (3) Friendly Service (4) Quality Care (5) Other (6)	(1) (2) (3) (4) (5) (6)		
4.4f_other	Specify:			
4.6	Do you feel that your facility is competing for clients with other facilities?	yes	no (go to section 5)	Don't Know (9)
	If yes, in what ways does this facility compete? (ask for each category)			
4.7a	Outreach	yes	no	
4.7b	Marketing	yes	no	
4.7c	Reduction in waiting time	yes	no	
4.7d	Offering Friendly Service	yes	no	
4.7e	Improved Quality of Care	yes	no	
4.7f	Other	yes	no	
4.7f_other	Specify:			
4.8	Since vouchers fix prices, what do you do when you have patients that need more care?			
	(1) Give care for free			
	(2) Ask for additional payment			
	(3) Other			
	Describe:			
5. Consequences of Voucher Program				
5.1	In your opinion, what are some of the benefits of the voucher program for patients? (write in – code later)			Don't Know (9)
5.1a	In your opinion, what are some of the benefits of the voucher program for providers? (write in – code later)			Don't Know (9)
5.2	In your opinion, what are some of the disadvantages of the voucher program for patients? (write in – code later)			Don't Know (9)